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Pig Iron Curtailment

Output Now 7 Per Cent. Less Than on May 1—Some Hesitation in Finished Steel

Sharp curtailment in pig iron production is shown by our blast furnace statistics. Twenty-four furnaces were blown out or banked in April, and 10 others have gone out since May 1, or are scheduled for early closing down. The production in April, a 30-day month, was 2,483,763 gross tons, or 82,792 tons a day, against 2,617,949 tons in March, or 84,459 tons a day. The daily capacity in blast May 1 was 78,693 tons, against 84,610 tons April 1, showing that production of coke and anthracite iron is now about 6000 tons a day less than a month ago. This represents a reduction in the yearly rate of 2,200,000 tons, or 7 per cent., indicating that pig iron of all kinds, charcoal iron included, is now being produced at the rate of about 29,100,000 tons a year. The furnaces about to go out represent an output of 900,000 tons a year, so that by another 10 days it is fair to assume that the rate of pig iron production will be 10 per cent. less than on April 1.

The April product of the blast furnaces was the smallest since September. The merchant furnaces showed a falling off last month of 1200 tons a day from their March rate, while steel works furnaces made only 450 tons a day less. The steel companies will show a greater falling off in May, however, as a number of their furnaces went out late in the month. The Steel Corporation blew out 11 furnaces in April, while independent steel companies have made a relatively small reduction in output.

The effect of the restrictive movement on the pig iron market is sharply watched. While most buyers are waiting to profit further by the example of some large interests, who took hold earlier in the decline, it is recognized that in any event the pace of the downward movement will now be slower. Southern producers find significance in the fact that buyers' recent bids below the $12, Birmingham, basis are yet above the low point consumers have been predicting.

Reports have come up of Southern iron sold below the $12 level, but such lots are exceptional and for early delivery.

A canvass of pig iron stocks at merchant furnaces, made by furnace interests, is reported to indicate a net reduction of 500,000 tons from the 1,600,000 tons reported in July, 1909, but a considerable increase since the beginning of this year.

The markets for steel making irons are weak and transactions are of little amount. Buying by Central Western steel companies is a very remote contingency.

The weakness in Bessemer billets has been accented in the past week; at the same time there is evidently no surplus of open hearth billets. The spread between the two products has widened to $1.50 and even $2.

More evidence appears in finished material markets of the effect of the continued decline in pig iron.

Hesitation is shown in contracting for forward deliveries of certain products, some consumers being evidently influenced by the possibility of later concessions from present levels.

Wage advances have been announced by four independent steel companies, approximating 6 per cent. in most cases. Common labor is given the largest increase, or about 10 per cent.

Structural steel, after a quiet period, shows improvement in inquiry, though on important contracts new low points have been touched. The New Haven has placed about 4000 tons of bridge work. The three-depot projects of Chicago, Kansas City and St. Paul will call for 100,000 tons. In New York the new subways, on which definite developments are expected soon, will require 50,000 tons of deformed bars and 100,000 tons of structural shapes.

Apart from 4300 tons of additional orders from the Harriman lines, rail business has been light. Plate mills will be called on for 25,000 tons for the Panama Canal locks. Bids on this and other steel for Panama are opened May 5.

Copper has gone to lower levels, sales of electrolytic being reported at 12.40c., and of lake copper at 13c. Spelter has declined sharply, to 5.15c.

Political Agitation and Business in 1910

The conflicting trade currents of 1910 bring new perplexity when wage advances are attended with falling commodity prices. As the political side of every development affecting the cost of living has been made prominent in recent months, it may now be expected that the bearing of the decline in cereals and in certain manufactured products on the issues that will be before the country next fall will have widespread attention. The state of the public mind has been such that the tariff act of 1909 has been made the scapegoat for many of the evils of which complaint has been loud. If now some of these evils are partly cured before the political battle is joined, and without any new legislation, it will be interesting to see how far the popular judgment will be affected.

Events have been known to settle political hubbub in a way that has disconcerted politicians and so-called economists. For example, the good crops of 1896, which were the beginning of an era of prosperity for Western farmers, were a great factor in the defeat of free silver in that year. The misfortunes that came upon thousands of our people in the panic of 1893, and the few years following, made them ready to support any policy seductively presented as a cure for their ills. From hundreds of platforms the West was told that silver demonetization was responsible for its misfortunes; that the farmer was a man without a future, and that dollar wheat would never come again. The crop of 1896 was a better antidote to that kind of propaganda than all that was said or written to refute it.

And now, whatever the relation of the tariff to certain commodity prices in the United States, it is perfectly evident that the din of agitation over high prices in the year following the passing of a new tariff act has connected the latter with the high prices in the minds of multitudes. It matters not that certain commodities have advanced while the tariff on them was reduced last year. This is a country in which currency and economic questions, like questions of human rights, must be settled by majorities. Sustained or advancing high prices are the admitted fact in the case. If the people should be partly or wholly wrong in their diagnosis of the cause and in their choice of a remedy, there is no appeal except to the same majority after it has been instructed, it may be by sad experience.

The wage advances by railroads and by manufacturers have allayed the discontent of a portion of the community. Yet there are many thousands who have not had and are not likely to have their incomes increased. Whether the readjustment of the market prices of what they buy will go far enough and be rapid enough to keep many of them out of the ranks of the radicals remains to be seen. But apart from the matter of the cost of living, that has been so great an irritant, are the problems of the railroads, the consolidations, the currency and the tariff, and on all of these opposing views are shaping into issues that may soon be sharply drawn. That the old order is changing is plain enough; to what length the readjustment will go is the question to which every business interest is giving serious thought.

What is apt to be forgotten is that some readjustments have been under way, without the direct intervention of courts or congress or legislature. The railroads and the consolidations have been mending their ways. The fact that the political platforms of opposing parties have been converging has not been missed by leaders in industry and finance. Whatever new legislation or court pronouncements come in the next year or two will not find the business world unprepared. And it may be again, as it has been more than once, that fear has much overestimated the capacity of an impending political or economic change to interrupt the prosperity of the country. We need go no farther back than 1904 for a national campaign that seemed charged with disturbance to business, and that ended with a business revival well under way. It may turn out that while 1910 is marked by political turmoil it will at the same time show a volume of business confounding the forebodings of the prophets of evil.

The Supply and the Demand

The question is being asked whether this country will ever again face a condition of undersupply of iron. It is remarkable that this question should come up within such a comparatively brief period since we were importing considerable quantities of pig iron and some steel to meet a natural and not an overstrained demand, as was our experience in the latter part of 1906 and the early months of 1907.

The question is prompted by the fact that this appears to be the first time in our history when a period of great activity following a depression found the country in a state of preparedness for the increased growth in the demand. Previously, the great expansion in the country's iron and steel requirements after a long abstention from buying was too great a strain on our productive capacity, and we have seen prices soar almost to prohibitory hights while consumers were scrambling to get their needs supplied. But the revival of 1909 caught nobody napping. Our iron and steel manufacturers had taken warning from the developments of 1906-7, and steadily during the depression which followed they added more blast furnaces and ad-

ditions to their steel plants, so that, great as the demand has been, their facilities have proved to be equal to it, and in the case of pig iron have even run in excess of it. It is marvelous to think that, although the consumption of pig iron in the past six months has been far heavier than in any similar period in our history, the blast furnaces have actually been gaining on the demand. Thus we have for some time seen the anomaly of a decline in price with a volume of business far in excess of anything previously experienced.

Booms in trade have always been the result of a rise in consumption more rapid than the rate of increase in output. Buyers then become uneasy as to their future supply and anticipate their wants, often contracting for more than they really need so as to make sure that they will get as much as they want. Such conditions have heretofore invariably followed a depression in business. Something of the same character was at first witnessed when the revival in the demand came in the early part of last summer. But it was only felt in a few branches of the trade, and the impulse only lasted for a limited time. It was seen that the country was well supplied with productive capacity, or that new capacity was rapidly coming in sight. Therefore the buying fever abated and orders were no longer placed for requirements running far ahead. In but a few branches—notably steel bars, tin plates and sheets—has the demand outrun the supply to any extent, and even in those branches rapid strides are being made in the effort to keep pace with it.

It is, of course, possible that we may again see a period of depression of such long continuance as to make the replacement of ordinary wear and tear so huge a factor when confidence is restored that the demand for that purpose and for new undertakings may be vast enough to swamp the trade with orders and bring about another boom. This, however, seems unlikely in view of the larger scale of operations upon which the iron trade is now conducted. The great corporations are much better equipped for handling problems of this character than their small predecessors were, while fresh capital seems ever obtainable for new undertakings in the iron trade, if such projects are properly presented. We may never again see the low prices of 1893-1898 repeated in this country, as the conditions then existing are not likely to be paralleled; but, on the other hand, conditions in the iron trade seem to be so shaping themselves as to present a definite limit beyond which prices are not likely to rise.

A Present Menace to Autogenous Welding

Of all the tools and agents given into the hands of man, the most valuable are often the most dangerous. Power in inanimate things is without conscience or reason; it follows that it may exert itself for evil as well as good. Because dynamite can and does work destruction of life and property does not argue that it should never be applied to useful purposes. The physician's most potent remedies are also the deadliest poisons, but he does not discard them for that reason. Electricity has killed many, nevertheless it is indispensable. All of these things and many others equally familiar which might be mentioned, dangerous in the extreme in the hands of careless or malicious persons, will continue to be used. It would be universally pronounced absurd to suggest abolishing them, because familiarity in these cases has bred, not contempt, but confidence, and the precautions necessary for their safe use are common knowledge. Yet all of them which have appeared within the time covered by recorded history, it can be shown, were condemned at their introduction as being unsafe, and history will repeat itself once more with regard to the oxy-acetylene welding and cutting process. Accidents have occurred and more will occur, though fortunately with decreasing frequency, and in a few years it will be forgotten that its use was ever feared. Such reassurance will not satisfy those who are at present concerned with introducing the art, and it is but natural and right that they are applying themselves to spreading information as to what causes these accidents and how they may be avoided.

In a statement recently issued by a leading manufacturer of oxy-acetylene apparatus it is pointed out that all of the chemicals and materials used in the production or generation of acetylene and oxygen are harmless if properly handled, and that the generating process is also safe if certain precautions are taken and directions are not ignored. Speaking of acetylene generators, this statement recalls the experience that was had when acetylene was introduced for lighting, and which in a measure is being repeated now in connection with generators for welding. Many have engaged in the building of acetylene generators who are either ignorant or unscrupulous, and are marketing apparatus which is dangerous. Still others, seeking to save themselves the expense of purchasing equipment, are endeavoring to make it for their own use and run the risk which must follow when they lack sufficient familiarity with what constitutes a safe method of generation. The National Board of Fire Underwriters has, for some time, provided rules which, adhered to, practically eliminate danger. For one thing, it favors the carbide-to-water process as distinguished from the water-to-carbide process as least likely to generate excessive heat and further requires that the proportions of the two shall be maintained in the ratio of one gallon of water to each pound of carbide, this insuring cool generation. The user of apparatus may safely accept any apparatus which has the approval of this Board.

It appears with reason that objection is raised against the use of an acetylene generator in a portable equipment, particularly as acetylene, when compressed in containers filled with a porous material saturated with acetone, can be handled quite roughly without risk. Acetylene cannot be compressed directly in tanks to a pressure of more than 30 lb. without risk of an explosion. Acetone possesses the property of absorbing 25 times its own volume of acetylene for each atmosphere of pressure and eliminates the danger. Arguments well taken against the transporting of an acetylene generator are that it stands the chance of being upset by running against something while it is being moved, or by being struck with the load of a moving crane, even though it be stationary itself. Anything which will upset the generator throws the water and carbide suddenly together, generating an excessive pressure, which, even if relieved through a safety valve, throws a dangerous amount of explosive gas into the air. Another danger in transporting an acetylene generator is that it may be placed too near to a

furnace or a hot casting, again producing chance of explosion.

Among means for producing oxygen chemically the manufacturer above referred to criticises those which attempt to generate the oxygen under more than sufficient pressure to wash it thoroughly and force it into a gasometer, declaring that the ultimate pressure required should be obtained by subsequent compressing by a compressor, preferably by two stages with intercooling between the stages. While this may be the safest course to pursue, and generally speaking the safest is the best, there are still some grounds to question this criticism, as there are to-day equipments in quite common use making oxygen under pressure that are evidently entirely successful, at least from the standpoint of being safe.

The principal danger from oxygen is one not often realized. It is, of course, not combustible itself, but is the element which supports combustion and, particularly under high pressure, becomes dangerous, as it will unite with and cause the burning, when sufficient heat is caused to start the process, of things which under ordinary conditions are considered noncombustible. Accidents, fortunately rare, have occurred where a slight leak in a tank containing oxygen under high pressure and the presence of a particle of oil or other carbonaceous matter becoming heated, by friction, possibly, of the escaping gas, have produced a spark that started the burning of the steel container, permitting the oxygen to issue in a gust that literally consumed everything in its path. Men have been terribly burned, and sometimes fatally, through just such accidents as this. The protection in this case would seem to be the use of oxygen only under quite moderate pressures, say not over 300 lb. While less can be carried in the same space at this pressure, the container for a given quantity, though bulkier, need be scarcely if any heavier than one containing the oxygen at many times the pressure.

Certain it is that defective and dangerous types of oxy-acetylene apparatus which have been constructed have tended to place a stigma on the process, and it would seem the appropriate step for those sincerely interested in the advancement of the art to use their best endeavors to educate the public in what constitutes safe construction, design and use of the equipment. It is an error of judgment to seek to prevent the spread of knowledge of accidents which have occurred; better that they be given the widest publicity and their causes explained that their repetition may be avoided if possible. The sooner that users and probable users of the apparatus are aware of the exact truth the more rapid will be the real progress made.

Fair Treatment for the Kerosene Engine.

Builders of kerosene engines give as a chief reason for the comparatively slow progress made by the type in the United States, as compared with European and other countries, that users insist upon putting unskilled men in charge of them. Normally the oil engine should be in much more common use here, because of the cheaper fuel. As it is, too large a percentage of American built kerosene engines is shipped abroad.

This motor is by no means a complicated machine. Its mechanism is, on the whole, simpler than that of the gasoline type. The very fact of its simplicity leads its owners to believe that its care can be intrusted to any man who chances to be available. The steam engineer must have a legally established knowledge of his vocation, for without it he cannot obtain the necessary license. The gasoline engineer, though requiring no license, must be trained to know his business or be constantly in hot water. But the kerosene engine is supposed to run indefinitely under any condition of operation. No doubt there is good ground for the contention of its builders, that if the operator be given the necessary instruction and experience, and has a fair share of brain development, no greater trouble would be experienced with this type than with others. In many cases the man furnished by the builder to run the engine for a customer is replaced by some one in the shop who understands only the rudimentary principles of its operation, and the result is a breakdown or other cause for condemnation, just as would happen if a steam engine were given into incompetent hands. It is a pretty good rule that any machine is deserving of skilled attention up to the limits of its needs, and the oil engine should be no exception.

The Iron & Steel Products Company in Receivers' Hands.—W. Vernon Phillips and Jacob M. Shenk have been appointed receivers by the United States Circuit Court, of the Iron & Steel Products Company, a New Jersey corporation, with offices in the Real Estate Trust Building, Philadelphia, Pa. This action was taken on the petition of Plitt & Co., creditors, and Eli Atwood, a stockholder. The concern is the holding company for a number of bar iron companies and a chain manufacturing company, which were merged about a year ago. It has a capital stock of $2,500,000. The companies merged were the Bristol Iron & Steel Company, Bristol, Pa.; Canton Iron & Steel Company, Baltimore, Md.; Lebanon Chain Works, Lebanon, Pa.; Hollidaysburg Iron & Steel Company, Hollidaysburg, Pa., and West End Iron Company, Lebanon, Pa. The action was precipitated by recent injunction proceedings, by which the Baltimore plant was closed. It is stated that the company is solvent but short of working capital. The decree of the court permits the receivers to operate the different plants.

Pennsylvania Steel Company Improvements.—The programme of improvements to which the Pennsylvania Steel Company will apply the proceeds of the new issue of $4,087,500 of preferred stock will include additional open hearth furnaces at Steelton, Pa., and the provision of new finishing capacity at the Sparrows Point, Md., plant of the Maryland Steel Company.

The National Association of Jobbers of Plumbing Supplies was organized at a meeting composed of a very large number of jobbers representing all sections of the country, which was held in the Imperial Hotel, Niagara Falls, N. Y., April 25 and 26. Clarence V. Kellogg, Chicago, was elected president and Thomas A. Fernley, 505 Commerce street, Philadelphia, secretary.

The S. Obermayer Company, Cincinnati, Chicago and Pittsburgh, has sold the entire equipment for the installation in the new foundry department of the cruiser Dixie a complete portable foundry, wherein any and all necessary repairs can be made at sea.

The new blast furnace of Worth Brothers Company, Coatesville, Pa., will be blown in in the early part of next week.

March Exports and Imports of Iron and Stele

Both exports and imports of iron and steel showed a sharp gain in March as compared with February. The value of the exports of iron and steel and manufactures thereof, not including iron ore, was $17,258,503 in March, against $13,949,082 in February, while the value of similar imports was $4,079,763 in March, against $2,911,686 in February.

The exports of commodities for which quantities are given totaled 124,753 gross tons in March, against 110,224 tons in February. The details of the exports of such commodities for March, and for the nine months of the fiscal year ending with March, are as follows, compared with the corresponding periods of the previous year:

Exports of Iron and Steel.

	March,		Nine mos. ending March,	
	1910.	1909.	1910.	1909.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	5,944	2,792	51,346	35,005
Scrap	1,790	2,345	9,057	15,219
Bar iron	2,013	2,207	10,838	8,400
Wire rods	2,828	1,653	16,045	7,709
Steel bars	8,843	5,057	65,634	34,989
Billets, blooms, &c	266	8,453	48,965	72,919
Hoop, bands, &c	407	272	3,548	2,706
Steel rails	33,507	17,027	288,938	164,275
Iron sheets and plates	11,097	5,549	70,154	39,025
Steel sheets and plates	15,871	8,138	101,552	52,548
Tin and terne plates	1,440	431	8,118	3,268
Structural iron and steel	10,272	8,815	73,281	80,665
Barb wire	5,949	6,539	53,375	49,921
Wire	8,213	6,536	56,744	47,772
Cut nails	427	682	6,882	5,151
Wire nails	2,696	2,601	25,201	20,690
All other nails, including tacks	1,032	836	6,047	5,037
Pipe and fittings	12,158	14,584	126,835	88,492
Totals	124,753	94,517	1,022,560	733,791

The imports of commodities for which quantities are given totaled 57,150 gross tons in March, as compared with 44,519 tons in February. The details of such imports for March and for the nine months ending with March, as compared with the corresponding periods of the previous year, are as follows:

Imports of Iron and Steel.

	March,		Nine mos. ending March,	
	1910.	1909.	1910.	1909.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	21,362	10,771	178,167	77,168
Scrap	14,469	249	108,862	4,245
Bar iron	3,046	1,865	20,492	11,902
Rails	2,508	64	5,157	1,201
Billets, bars and steel in forms n.e.s	5,386	1,320	25,514	9,594
Sheets and plates	467	503	4,541	2,429
Tin and terne plates	7,094	4,329	50,847	34,342
Wire rods	2,148	1,409	9,774	8,914
Structural iron and steel	670	310	6,648	4,928
Totals	57,150	20,820	410,002	154,723

The imports of iron ore in March were 163,633 gross tons, against 170,427 tons in February and 108,676 tons in the month of March, 1909. The total importations of iron ore for the nine months ending with March were 1,741,293 gross tons, against 718,758 tons in the corresponding period of the previous year.

Of the March imports of iron ore, 116,430 tons came from Cuba, 45,120 tons from Europe, 1770 tons from British North America and 313 tons from other countries.

The total value of the exports of iron and steel and manufactures thereof, not including ore, for the nine months ending with March, was $128,442,680, against $105,148,957 in the corresponding period of the previous year. The total value of similar imports in the nine months ending with March was $28,237,323, against $15,579,347 in the corresponding period of the previous year.

The Stonega Coke & Coal Company has acquired the property of the Keokee Consolidated Coke Company of Keokee, Lee County, Va., and of Imboden, Wise County, Va. The Stonega Coke & Coal Company will now have a coal production exceeding 2,000,000 tons annually and a coke capacity exceeding 1,000,000 tons annually. A. H. Reeder, vice-president and general manager, takes charge of the plants formerly operated by the Keokee Consolidated Coke Company.

Labor Notes.

Announcement was made by the Jones & Laughlin Steel Company, at Pittsburgh, last week of an increase amounting to about 6 per cent. in the wages of all employees who are not on a tonnage or yearly salary basis. It became effective May 1.

After a month's suspension of work the union bituminous coal miners in the Pittsburgh district returned to work this week at an increase of 5.55 per cent. in wages.

The machinists on the Missouri, Kansas & Texas Railway have been granted an increase of 3 cents an hour. A similar increase has been given machinists on the Kansas City Southern, International & Great Northern, Texas & Pacific, Houston & Texas Central, and Galveston, Houston & San Antonio railways. By the new arrangement Missouri, Kansas and Texas machinists receive 39 cents an hour in Missouri, 40 cents in Kansas and Northern Oklahoma, and 42 cents in Southern Oklahoma and Texas, based on a nine-hour schedule. These rates are a compromise.

The pattern makers employed in the job shops in Cleveland, Ohio, and their employers have adopted a new wage agreement. The men, who had been getting minimum wages of 40 cents an hour, demanded a minimum scale of 45 cents an hour and the recognition of their union. A settlement was effected on the basis of 42½ cents an hour, with no recognition of the union.

Two or three strikes have resulted this week in the New York district from the refusal of the demand of union molders and coremakers for an advance to $3.50 a day, effective May 1. The foundrymen have conceded an increase of 25 cents a day to each class of labor, but are not willing to advance coremakers to a parity with molders, the differential having long been 25 cents. In some shops the men have remained at work, with the matter still unadjusted. The E. W. Bliss & Co. and the R. Hoe & Co. foundries are among those from which the molders and coremakers went out.

A corporation has been formed under the name of the United Enameling & Specialty Company, which will operate on practically the same lines as the National Enameling & Stamping Company. The executive offices will be at Middletown, Conn. The new company has been incorporated under the laws of New York and is a holding company for the following corporations: New England Enameling Company, United States Specialty Company, American Electric Welding Company, Import Company and United States Specialty Company of Canada. The United Enameling & Specialty Company has an authorized capital of $4,000,000, of which $1,000,000 is preferred and $3,000,000 common stock.

The rebuilt Furnace D of the Bethlehem Steel Company's group, South Bethlehem, Pa., recently blown in, has made 407 tons of iron in 24 hours, while Furnace E, completed in 1907, had an output of 427. The new furnace is expected to be in a short time the largest producer in the group.

The Benjamin Electric Mfg. Company, manufacturer of electric lighting specialties, announces that all its Chicago business will henceforth be transacted from the new factory and office headquarters, 120-128 South Sangamon street, in which the company is now permanently located.

Pig Iron Production

A SHARP DECREASE IN APRIL

Active Capacity May 1 About 6000 Tons a Day Less Than on April 1

Curtailment in pig iron production is well under way. The number of coke and anthracite furnaces in blast was cut down by 24 in April, being 290 on May 1 against 314 one month previous. The production in April, a 30-day month, was 2,483,763 gross tons, or 82,792 tons a day, against 2,617,949 tons in March, or 84,459 tons a day. The daily capacity in blast May 1, which is an index to the extent of the restrictive movement, was 78,693 tons, against 84,610 tons April 1, showing that production of coke and anthracite iron is now about 6000 tons a day less than a month ago. This represents a reduction in the yearly rate of 2,200,000 tons, indicating that production of all kinds of pig iron, charcoal iron included, is now at the rate of about 29,100,000 tons a year.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, beginning with April, 1909, is as follows:

Daily Rate of Pig Iron Production by Months.—Gross Tons.

	Steel works.	Merchant.	Total.
April, 1909	36,436	21,526	57,962
May	40,531	20,222	60,753
June	45,507	19,149	64,656
July	48,670	19,123	67,793
August	51,354	21,192	72,546
September	55,361	24,146	79,507
October	57,067	26,789	83,856
November	56,333	28,584	84,917
December	57,058	27,964	85,022
January, 1910	57,200	26,948	84,148
February	57,876	27,740	85,616
March	56,113	28,346	84,459
April	55,663	27,129	82,792

Capacity in Blast May 1 and April 1

The following table shows the daily capacity of furnaces in blast May 1 and April 1. For the sake of uniformity we have adopted the daily rate rather than the weekly rate for this comparison, since our production records are now on the per diem basis:

Coke and Anthracite Furnaces in Blast.

Location of Furnaces.	Total number of stacks.	May 1. No. in blast.	May 1. Capacity per day.	April 1. No. in blast.	April 1. Capacity per day.
New York:					
Buffalo	16	14	4,748	16	5,296
Other New York	7	3	558	3	502
New Jersey	8	5	970	5	953
Spiegel	2	..	....	..	....
Pennsylvania:					
Lehigh Valley	23	15	2,085	14	1,645
Spiegel	3	3	178	3	165
Schuylkill Valley	15	9	1,742	11	1,940
Lower Susquehanna	7	5	1,167	6	1,118
Lebanon Valley	10	9	1,190	9	1,125
Pittsburgh district	50	41	16,310	46	18,652
Spiegel	3	3	418	3	461
Shenango Valley	20	15	4,148	15	4,194
Western Pennsylvania	27	20	4,702	20	4,926
Maryland	4	3	825	3	894
Wheeling district	14	9	3,174	11	3,530
Ohio:					
Mahoning Valley	22	20	7,519	20	7,532
Central and Northern	21	13	4,833	20	7,053
Hocking Val., Hang. Rock & S. W. Ohio	15	12	1,608	12	1,547
Illinois and Indiana	32	27	11,230	29	11,434
Spiegel	2	2	147	2	202
Mich., Wis. and Minn.	9	6	1,125	7	1,275
Colo., Missouri & Wash.	7	5	1,335	5	1,214
The South:					
Virginia	23	12	1,340	13	1,452
Kentucky	5	2	295	2	295
Alabama	46	24	5,650	25	5,808
Tennessee & Georgia	20	13	1,396	14	1,397
Total	411	290	78,693	314	84,610

The list of furnaces blown out or banked in April (or on May 1) and that were idle on May 1 includes one Buffalo Union and one Tonawanda in the Buffalo district, one Crane and one Bethlehem in the Lehigh Valley, Topton and one Warwick in the Schuylkill Valley, Lochiel in the Lower Susquehanna Valley, one Clairton, one Duquesne, Neville Island, one Monongahela, one Eliza and Clinton in the Pittsburgh district; Colonial in western Pennsylvania, Buena Vista in Virginia, Belmont and Martin's Ferry in the Wheeling district; Emma, Zanesville, one Cleveland, one Columbus, two Lorain and one Toledo in northern and central Ohio; one Gary in Indiana, one Bay View in Wisconsin, one Bessemer in Tennessee.

The list of furnaces blown in last month is short: One Bethlehem and Crumwold in the Lehigh Valley, Earlston in western Pennsylvania and Red River in Tennessee.

April Output by Districts

The table below gives the production of all coke and anthracite furnaces in April and the four months preceding:

Monthly Pig Iron Production.—Gross Tons.

	December. (31 days)	January. (31 days)	February. (28 days)	March. (31 days)	April. (30 days)
New York	166,725	172,260	156,470	180,005	166,307
New Jersey	35,711	28,856	26,102	29,557	29,092
Lehigh Valley	65,951	62,601	54,028	52,224	64,910
Schuylkill Val.	57,585	60,624	53,996	62,865	61,084
Lower Susquehanna and Lebanon Val.	75,737	69,413	64,054	70,738	71,694
Pittsburgh dis.	617,952	603,261	541,791	592,494	513,531
Shenango Val.	157,901	159,418	137,095	137,315	124,440
West. Penn.	146,732	141,495	133,266	143,308	141,246
Md., Va. and Kentucky	75,450	72,425	66,454	78,761	77,032
Wheeling dis.	139,496	124,556	120,036	113,753	106,736
Mahoning Val.	233,147	232,381	220,779	241,653	225,588
Central and North. Ohio.	217,217	217,681	201,462	218,660	181,805
Hocking Valley, Hanging Rock And S.W.Ohio.	48,163	49,658	42,876	47,935	48,264
Mich.,Minn.,Mo., Wis., Colo.	67,626	70,989	65,363	77,209	75,802
Chicago dis.	314,634	333,892	322,196	348,972	351,272
Alabama	177,568	170,143	154,337	180,836	173,071
Tenn., Georgia and Texas	38,085	38,952	36,949	41,664	41,889
Totals	2,635,680	2,608,605	2,397,254	2,617,949	2,483,763

Production of Steel Companies

Returns from all plants of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last are stated separately, but are included in the columns of "total production."

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.— 1908.	1909.	1910.	Spiegeleisen and ferromanganese. 1909.	1910.
January	664,415	1,117,823	1,773,201	12,325	19,538
February	745,802	1,073,363	1,620,539	10,046	21,396
March	841,502	1,140,553	1,739,212	23,743	25,591
April	725,548	1,093,092	1,669,898	22,478	22,304
May	759,674	1,256,448	.....	20,834	.....
June	717,689	1,365,527	.....	16,516	.....
July	798,639	1,508,762	.....	17,613	.....
August	897,052	1,591,991	.....	22,313	.....
September	933,514	1,660,839	.....	28,148	.....
October	996,481	1,769,094	.....	25,384	.....
November	981,167	1,689,994	.....	23,376	.....
December	1,090,339	1,768,799	.....	20,791	.....

The Curves of Pig Iron Production and Prices

The curve of pig iron production from January, 1907, to the present time is shown in the accompanying chart. The figures plotted are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at Chicago. They are based on the weekly market quotations of *The Iron Age*. The two sets of figures are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—Gross Tons.

	1907.	1908.	1909.	1910.
January	71,149	33,718	57,975	84,148
February	73,038	37,163	60,976	85,616
March	71,821	39,619	59,232	84,459
April	73,885	38,289	57,962	82,792
May	74,048	37,603	60,753	.....
June	74,486	36,444	64,656	.....
July	72,763	39,287	67,793	.....
August	72,594	43,851	72,546	.....
September	72,783	47,300	79,507	.....
October	75,386	50,554	83,856	.....
November	60,937	52,595	84,917	.....
December	39,815	56,158	85,022	.....

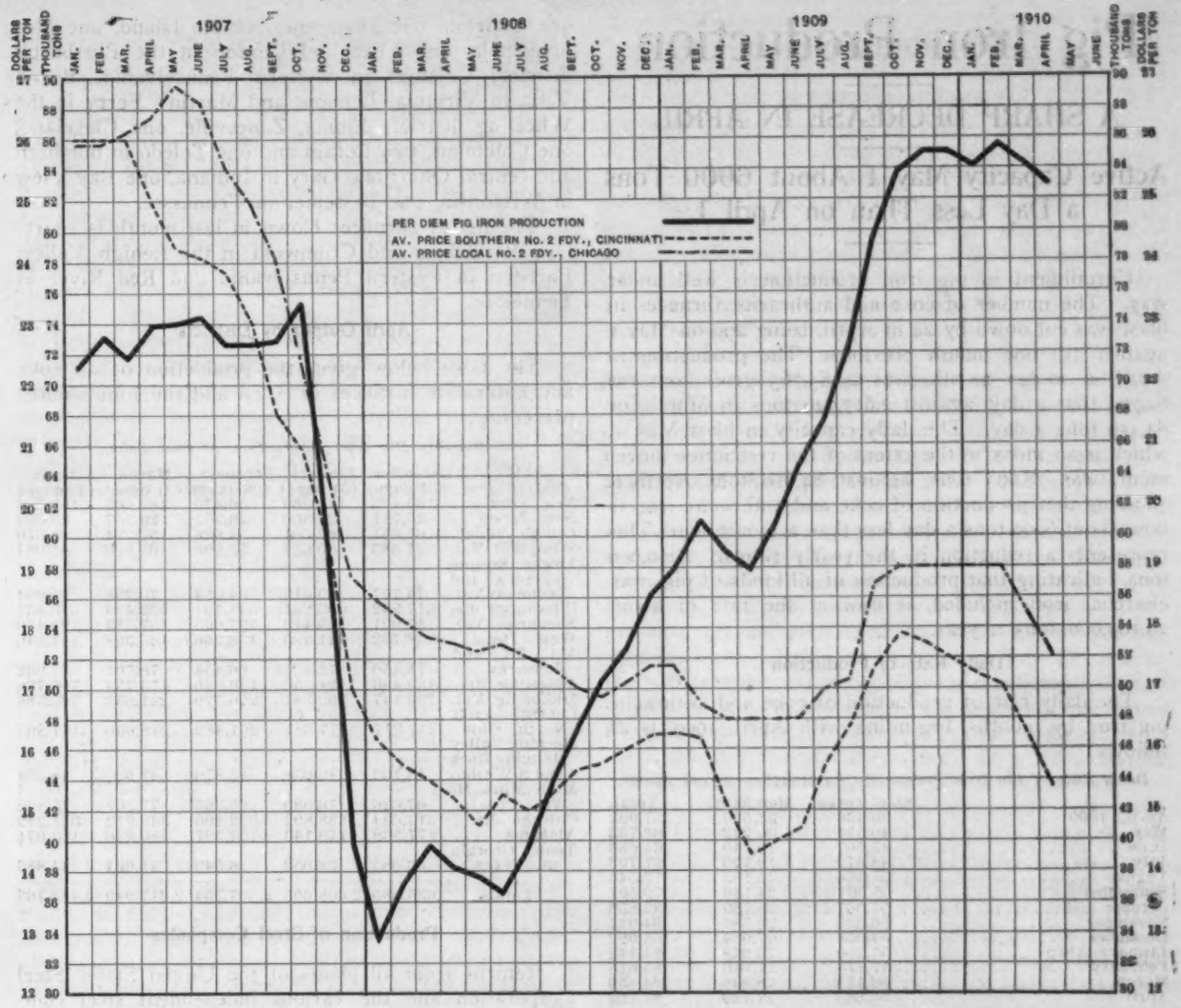

Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to May 1, 1910; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago.

Monthly Average Prices in Dollars of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry at Chicago Since January, 1907.

	1907.		1908.		1909.		1910.	
	Sou. No. 2 Cin.	Loc. No. 2 Chi.	Sou. No. 2 Cin.	Loc. No. 2 Chi.	Sou. No. 2 Cin.	Loc. No. 2 Chi.	Sou. No. 2 Cin.	Loc. No. 2 Chi.
Jan.	26.00	25.85	16.15	18.45	16.25	17.35	17.25	19.00
Feb.	26.00	25.85	15.75	18.16	16.13	16.75	17.06	19.00
March	26.00	26.10	15.50	17.85	15.05	16.50	16.30	18.30
April	25.06	26.35	15.20	17.78	14.25	16.50	15.37	17.50
May	24.25	26.85	14.75	17.63	14.50	16.50	.....	.....
June	24.10	26.60	15.25	17.73	14.70	16.50	.....	.....
July	23.85	25.55	15.00	17.55	15.75	17.00	.....	.....
Aug.	23.00	24.85	15.25	17.35	16.38	17.13	.....	.....
Sept.	21.50	24.10	15.65	17.05	17.35	18.70	.....	.....
Oct.	20.95	22.45	15.75	16.85	17.88	19.00	.....	.....
Nov.	19.50	20.66	16.00	17.10	17.75	19.00	.....	.....
Dec.	17.00	18.80	16.25	17.35	17.45	19.00	.....	.....

The Record of Production By Months

Production of Coal and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—*Gross Tons.*

	1907.	1908.	1909.	1910.
January	2,205,607	1,045,250	1,797,560	2,608,605
February	2,045,068	1,077,740	1,707,340	2,397,254
March	2,226,457	1,228,204	1,832,194	2,617,949
April	2,216,558	1,149,602	1,738,877	2,483,763
May	2,295,505	1,165,688	1,883,330	.....
June	2,234,575	1,092,131	1,930,866	.....
July	2,255,660	1,218,129	2,103,431	.....
August	2,250,410	1,359,831	2,248,930	.....
September	2,183,487	1,418,998	2,385,206	.....
October	2,336,972	1,567,198	2,599,541	.....
November	1,828,125	1,577,854	2,547,508	.....
December	1,234,279	1,740,912	2,635,680	.....

The Pennsylvania Forge Company, manufacturer of steel forgings, Bridesburg, Philadelphia, Pa., has undergone a change in part of its official staff. The common stock of the company held by the estate of the late Thomas C. Craig has been sold to Charles Wilson, who has been elected vice-president and treasurer. The company makes a specialty of high class work and has orders booked ahead for some time.

The Autocall Plant Intercommunicating System

The Lodge & Shipley Machine Tool Company, Cincinnati, is employing a new system of communication between officials and heads of departments, known as the Autocall system, which is operated from the central shop telephone exchange by the regular attendant. The new method of calling officials and office heads is by electric gongs, 16 of which are placed in favorable positions about the plant. When an inquiry is made at the general offices for any official, if he is out of his office the telephone operator throws a little lever which sounds that individual's call at all stations. He is thus bound to hear it within a very few moments, and steps to one of the 28 or 30 private telephones about the plant and communication is established immediately. The desk of the president, William Lodge, has electric push buttons, one for each of the 15 heads, by which he may call them directly. The signals used are combinations of strokes and intervals as for fire alarms. The company reports that the advantages over the usual messenger call methods are great, and the saving in time is remarkable.

The Bickford Fire Brick Company has removed its offices from Pittsburgh to Curwensville, Clearfield County, Pa., where its works are located. The company is making large additions to its plant, which will more than double the capacity, and the establishment of headquarters at the works appeared imperative to enable the closest attention to be given to the details of manufacture and shipment.

Obituary

JOHN H. CONVERSE

John Heman Converse, president of the Baldwin Locomotive Works, Philadelphia, died at his home at Rosemont, Pa., May 3, aged 69 years. He was born at Burlington, Vt., December 2, 1840. He graduated from the University of Vermont in 1861. Engaging in journalism he was for three years connected with the editorial department of the Burlington *Times*. In 1864 he went to Chicago, and for two years was in the service of the Chicago & Northwestern Railway Company. In 1866 he removed to Altoona to accept a position with the Pennsylvania Railroad Company under Edward H. Williams, general superintendent. In 1870 he secured a desirable position with the Baldwin Locomotive Works through Mr. Williams, who had become one of the proprietors thereof, and three years later was admitted into the firm.

Mr. Converse was intrusted with the general business and financial management of the works, as apart from the mechanical departments. How well he mastered these duties is evidenced by the wonderful growth of the plant. When Matthias W. Baldwin died in 1866, the output of the works established by him had reached 118 locomotives per annum; this capacity has grown to the production of over 2600 locomotives per annum, of a vastly improved and enlarged design, bearing as little resemblance to the old Baldwin locomotive as the ocean greyhound bears to the old packet steamer of generations ago. The market for the great product of these works is practically the entire civilized world, the firm having almost a monopoly of the export business in locomotives.

In addition to the successful management of the business affairs of this great manufacturing establishment, Mr. Converse has for many years held directorships and taken an active part in the management of numerous financial and other institutions, all of which have received his active and constant attention, bringing to all his undertakings a well trained mind and a wonderful aptitude in the conduct of financial matters. Among these institutions are the Philadelphia National Bank, the Philadelphia Trust Company, the Real Estate Trust Company and the Philadelphia Savings Fund. Since 1899 he has been a member of the Board of Directors of City Trusts, at first serving at the head of the committee having in charge the Girard Estate outside of the city, and later filling the position of chairman of the Household Committee. In addition to these positions he was at death a member of the Board of Public Education, president of the Fairmount Park Art Association, trustee of the Presbyterian Hospital and trustee of the Pennsylvania Academy of the Fine Arts.

He was always a large contributor to public objects; one of the principal buildings of the Presbyterian Hospital was erected entirely at his expense, and his benefactions to churches, charities and various educational and civic institutions have been constant and generous, indicating large and broad sympathy with the progressive humanitarian and religious movements of the day. He erected for the University of Vermont three buildings of great architectural beauty and completeness. In 1897 the university conferred upon him the honorary degree of LL.D. He leaves a widow, one son and two daughters.

WILLIAM W. SNOW

William Wait Snow, Hillburn, N. Y., one of the most prominent manufacturers of the country, and who did more toward the development of an important section of the historic Ramapo Valley than any other one man, died April 26, aged 82 years. He was of Welsh extraction. The founder of this branch of the Snow family, who had served under Oliver Cromwell, came to America and settled in Vermont. The grandfather of the late deceased served in the Revolutionary War and the father was colonel of the militia in the War of 1812.

Mr. Snow was born at Heath, Mass., July 17, 1828, and learned the bookbinding trade, which he followed for about three years. He served for the next two years as assistant civil engineer for the Woonsocket & Nassau Railroad. In 1848 he went to Woonsocket, R. I., and for five years was employed in a foundry, getting his first knowledge of the business in which he was to make a name for himself. Thence he went to Indianapolis, Ind., as superintendent of the Indianapolis City Foundry, where he remained about three years. In 1856 he removed to Newburgh, N. Y., where he, with others, established a factory for the manufacture of car wheels under the name of Stanton, Snow & Co. In 1859 he withdrew his interest and removed to Jersey City, N. J., where he held the office of general manager of the Union Car Wheel Works for six years.

In 1866 Mr. Snow located at Ramapo, N. Y., and organized the Ramapo Wheel & Foundry Company, of which he was first superintendent, then general manager, and finally president. He there designed and introduced improvements on the car wheels then in use, many of his ideas being recognized as standards by the railroads to-day. In 1873 he built the village of Hillburn, N. Y. In 1881 he organized the Ramapo Iron Works, at Hillburn, and was president of that company for a number of years, when he resigned and was succeeded by his son, Fred W. In July, 1900, he, with others, began the erection of commodious buildings at West Mahwah, N. J., and installed therein the Ramapo Foundry Company, of which he was president until its merger in the American Brake Shoe & Foundry Company, when he was made chairman of the executive board of the latter corporation, continuing to hold that position until his death. He was also instrumental in organizing the Rockland Electric Company of Hillburn, and in building a well-equipped plant for that company.

Socially, Mr. Snow was a member of a number of clubs in New York, Boston, Philadelphia and Chicago. He was a past grand commander of Knights Templar of the State of New Jersey. His wife died several years ago. He leaves one son and two daughters.

LEONARD SCHREIBER, president of the L. Schreiber & Sons Company, Cincinnati and Norwood, Ohio, died April 29, at his home in Cincinnati, aged 82 years. Mr. Schreiber was known as the pioneer in structural and ornamental iron work west of the Allegheny Mountains. He was born in Germany in 1828, and in 1849 came to America, taking up his first residence in New York City. He afterward lived in Albany and Buffalo, and in 1854 went to Cincinnati and started on a modest scale the business which has since grown to be one of the largest of its kind in the country. As his two sons, William A. and Louis, grew up he familiarized them with every branch of the business, and they are now and have been for some time in full charge. Until very recently the deceased was known as one of the most active men of his years in the community. He was also president of the German Mutual Fire Insurance Company, Cincinnati.

ALEXANDER SOWERBY HAY, long the head of the firm of Naylor, Benzon & Co., Ltd., London, England, died on April 30, aged about 70 years. Mr. Hay was for a number of years also a partner in Naylor & Co., New York, and was well known in the United States through his frequent visits to this country. He had been connected with a number of important interests in Great Britain, in iron and steel and other industries, these companies including Dorman, Long & Co. and the English & American Shipping Company.

ARTHUR SAFFORD, tube works sales manager of the Reading Iron Company, Reading, Pa., died April 18.

Personal

Oliver Crosby, American Hoist & Derrick Company, St. Paul, Minn., who has been in Europe for the past two months, is detained abroad by the serious illness of his son, who accompanied him.

S. S. Knight, for the past two or three years general manager of the Chester Steel Castings Company, Chester, Pa., has resigned that position to become assistant to the president of the Scullin-Gallagher Iron & Steel Company, St. Louis, Mo.

H. C. Poole has been appointed district manager of sales for the Colonial Steel Company in New York City, with office and warehouse at 177-179 Hudson street. He succeeds J. E. Barry, who has been transferred to the main office in Pittsburgh.

J. E. Lonngren, who has for several years been superintendent of the wire mills of the Colorado Fuel & Iron Company, at Pueblo, Colo., has been secured by the Cambria Steel Company, Johnstown, Pa., as superintendent of its new wire mills. He will also have charge of the construction work.

C. A. Hardy, formerly in the engineering sales department of the Whiting Foundry & Equipment Company, Harvey, Ill., has been made sales manager of the company.

J. H. Whiting, president of the Whiting Foundry & Equipment Company, Harvey, Ill., who has been seriously ill, is now convalescent and will return shortly to business activity.

The office of W. T. Moosman, advertising manager of the Jones & Laughlin Steel Company, has been removed from the Magee Building to room 48, Vandergrift Building, 323 Fourth avenue, Pittsburgh, Pa.

A. R. Calder of the Pennsylvania Steel Company, Steelton, Pa., has just returned from a trip abroad, having made a visit to the principal ports on the Mediterranean and the iron and steel centers of Europe and England.

President W. E. Corey of the United States Steel Corporation sails for Europe Thursday, May 5, on the George Washington, and will be abroad until the middle of July.

Capt. James J. Brennan, who for the past four years has been principal engineer for the extensive improvements of Spang, Chalfant & Co., Inc., at Etna, Pa., and borough engineer of Sharpsburgh, Pa., has been appointed mechanical engineer of the Crucible Steel Company of America, with offices at Pittsburgh, and will devote his entire attention to this new appointment.

E. L. Billingslea, junior Chicago partner of Rogers, Brown & Co., has returned from his trip to the Mediterranean, and has resumed active work. He has recovered completely from the nervous breakdown which alarmed his friends last winter.

Arthur P. Van Schaick, formerly president of the W. K. Kenly Company, Chicago, has been appointed district sales agent of the Lackawanna Steel Company for Chicago territory, succeeding Charles R. Robinson, who recently became general sales agent at New York.

Arthur Foster, formerly secretary to James A. Campbell, president of the Youngstown Sheet & Tube Company, Youngstown, Ohio, has been given complete charge of the new insurance department of that company.

The Department of State has delegated Dr. W. H. Tolman, director of the American Museum of Safety, to represent the United States at the Ninth International Housing Congress, to be held in Vienna from May 30 to June 2. Robert W. De Forest is the president of the American section of the International Housing Committee, of which Dr. Tolman is the executive secretary. T. Commerford Martin and Arthur Williams are the other members. This congress is one of the most important international gatherings, assembling the leaders in the movement for improving housing, which is attracting the earnest attention of governmental officials, statesmen, publicists, social economists and men of affairs.

James G. Mustin, superintendent of the Allentown mills of the American Steel & Wire Company, has been transferred to the Rankin mills. James S. Phifer has been named superintendent, and W. F. Bigge assistant superintendent of the Allentown plant.

Jason Paige, until recently contracting engineer in the Lackawanna Bridge Company's New York office, is now identified with the sales department of the Inter Ocean Steel Company, with headquarters in the Railway Exchange Building, Chicago.

David M. Forker, former assistant manager of sales in Pittsburgh of the Republic Iron & Steel Company, has been elected vice-president of the D. T. Williams Valve Company, Cincinnati. He will be active in the management of the business, and will be at the head of the sales department. The other officers of the company are as follows: D. T. Williams, president; R. E. Mullane, treasurer; F. L. Swanberg, secretary. The company will arrange soon to erect a new plant.

Melville W. Mix, head of the Dodge Mfg. Company, Mishawaka, Ind., was elected president of the Manufacturers' Bureau of Indiana at its annual meeting April 28, which was held in the Columbia Club, Indianapolis.

J. R. McColl, mechanical engineer of the engineering department, American Blower Company, Detroit, Mich., has resigned his position with that company. Mr. McColl becomes a member of Ammerman, McColl & Anderson, an engineering firm succeeding Brush, Anderson & Ammerman, with offices in the Penobscot Building, Detroit.

C. L. Lomax, for five years manager of the plant of the South Sharon Coke Company, a subsidiary interest of the Carnegie Steel Company, has resigned, effective May 15. He will locate in New York City, to become American representative of a new by-product coke oven of German type.

The Production of Bessemer Steel in 1909

Total of Ingots and Castings, 9,330,783 Tons

The American Iron and Steel Association has received from the manufacturers complete statistics of the production of all kinds of Bessemer steel ingots and direct steel castings in the United States in 1909. The figures are as follows, gross tons being used throughout:

The production of Bessemer steel ingots and castings in 1909 was 9,330,783 tons, against 6,116,755 tons in 1908, an increase of 3,214,028 tons, or over 52.5 per cent. The production in 1909 was 2,945,047 tons less than in 1906, when the maximum production of 12,275,830 tons was reached. Of the total production in 1909 9,297,781 tons was made by the standard Bessemer process, against 6,096,478 tons in 1908; 15,006 tons by the Tropenas process, against 7992 tons in 1908, and 17,996 tons by other modifications of the Bessemer process, against 12,285 tons in 1908. In the total production for 1909 about 41,959 tons of alloyed steel ingots and castings are included, of which 40,483 tons were titanium steel, 1467 tons were manganese steel, and the remainder was nickel and vanadium steel. Of the total alloyed steel made 1646 tons was direct castings. In 1909 alloyed steel ingots or castings were made in Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Illinois, Wisconsin, Missouri and Oregon.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	May 4, 1910.	Apr. 27, 1910.	Apr. 6, 1910.	May 5, 1909.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	*$17.00*	$17.50	$18.00	$16.00
Foundry No. 2, Southern, Cincinnati	*15.25*	15.25	15.75	14.50
Foundry No. 2, local, Chicago	*17.25*	17.25	18.00	16.50
Basic, delivered, eastern Pa.	*17.90*	17.50	17.75	15.00
Basic, Valley furnace	*15.50*	15.75	16.00	14.00
Bessemer, Pittsburgh	*17.90*	17.90	18.40	15.65
Gray forge, Pittsburgh	*15.90*	15.90	16.15	14.40
Lake Superior charcoal, Chicago	19.00	19.00	19.00	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	*26.50*	26.50	27.00	23.00
Forging billets, Pittsburgh	32.00	32.00	32.00	25.00
Open hearth billets, Philadelphia	*30.00*	30.00	30.60	24.50
Wire rods, Pittsburgh	*32.00*	32.00	33.00	29.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	*15.00*	16.25	17.00	14.00
Steel rails, melting, Philadelphia	*15.00*	15.75	16.50	14.00
Iron rails, Chicago	*18.00*	18.50	18.50	16.50
Iron rails, Philadelphia	*20.00*	20.50	20.50	17.00
Car wheels, Chicago	*16.00*	16.00	17.00	14.75
Car wheels, Philadelphia	*15.50*	15.50	16.75	14.50
Heavy steel scrap, Pittsburgh	*15.50*	15.75	17.00	14.25
Heavy steel scrap, Chicago	*13.75*	14.25	14.75	13.00
Heavy steel scrap, Philadelphia	*15.00*	15.75	16.50	13.75
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	*1.50*	1.50	1.55	1.35
Common iron bars, Chicago	*1.50*	1.50	1.55	1.25
Common iron bars, Pittsburgh	*1.55*	1.60	1.65	1.30
Steel bars, tidewater, New York	1.61	1.61	1.61	1.31
Steel bars, Pittsburgh	1.45	1.45	1.45	1.15
Tank plates, tidewater, New York	1.71	1.71	1.71	1.41
Tank plates, Pittsburgh	1.55	1.55	1.55	1.25
Beams, tidewater, New York	1.66	1.66	1.66	1.41
Beams, Pittsburgh	1.50	1.50	1.50	1.25
Angles, tidewater, New York	1.66	1.66	1.66	1.41
Angles, Pittsburgh	1.50	1.50	1.50	1.25
Skelp, grooved steel, Pittsburgh	1.50	1.50	1.50	1.20
Skelp, sheared steel, Pittsburgh	1.60	1.60	1.60	1.30
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.40	2.40	2.40	2.20
Wire nails, Pittsburgh*	1.85	1.85	1.85	1.60
Cut nails, Pittsburgh	1.85	1.85	1.85	1.65
Barb wire, galv., Pittsburgh*	2.15	2.15	2.15	1.90
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	*13.00*	13.25	13.75	12.87½
Electrolytic copper, New York	*12.40*	12.75	13.25	12.62½
Spelter, New York	*5.15*	5.60	5.60	5.02½
Spelter, St. Louis	*5.00*	5.45	5.45	4.90
Lead, New York	4.40	4.40	4.40	4.22½
Lead, St. Louis	4.25	4.25	4.25	4.10
Tin, New York	*32.70*	32.90	32.90	29.10
Antimony, Hallett, New York	*8.12½*	8.25	8.25	7.75
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.64

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.50c. to 1.55c., net; I-beams over 15 in., 1.65c., net; H-beams over 8 in., 1.75c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; angles over 6 in., 1.65c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.75c., base, half extras, steel bar card; tees, 3 in. and up, 1.65c., net; zees, 3 in. and up, 1.60c., net; angles, channels and tees, under 3 in., 1.50c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.55c. to 1.60c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Black annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 and 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, $1.70 per square. Galvanized roofing sheets, No. 28, $3 per square, for 2½-in. corrugations.

Wrought Pipe.—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe which went into effect January 1:

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛ and ¼ in.	70	54	65	..
⅜ in.	71	57	66	52
½ in.	74	62	69	57
¾ in.	78	68	73	63
7 to 12 in.	72	57	67	52
Plugged and Reamed.				
1 to 4 in.	76	66	71	61
Extra Strong, Plain Ends.				
⅛ to ⅜ in.	63	51	58	46
½ to 4 in.	70	58	65	53
4½ to 8 in.	66	54	61	49
9, 10, 11 and 12 in.	54	42	..	..
Double Extra Strong, Plain Ends.				
½ to 8 in.	59	48	54	43

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1¼ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 5 in.	69	55
6 to 13 in.	61	43

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $32.

Steel Rivets.—Structural rivets, ¾-in. and larger, 2.15c., base; cone head boiler rivets, ¾-in. and larger, 2.25c., base; ⅝-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill. The above prices are absolutely minimum on contracts for large lots, makers charging the usual advances of $2 to $3 a ton to the small trade.

The Iron and Metal Markets

Pittsburgh

PARK BUILDING, May 4, 1910.—(*By Telegraph.*)

Pig Iron.—Consumers are evidently waiting for the bottom of the market to be indicated before placing contracts for their requirements for third and fourth quarters. Some small orders are being given for shipment prior to July 1, but the general movement is light. The output is being materially restricted and the production in May will no doubt show a large falling off as compared with April. It is beginning to be believed that prices of pig iron are close to bottom and that some buying will be done in the near future. Prices are weak but show no material change. We quote Bessemer iron at $17; basic, $15.50; No. 2 foundry, $15.50; malleable Bessemer, $15.75, and gray forge, $15, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

Steel.—Considerable tonnage in Bessemer billets and sheet and tin bars is being offered for resale, and at prices lower than producers will name. Open hearth steel continues scarce and is firm in price. We quote Bessemer 4 x 4 in. billets at $26.50; Bessemer sheet bars, $27 to $27.50; 4 x 4 in. open hearth billets, $28 to $28.50; open hearth small billets, $29.50 to $30; open hearth sheet and tin bars, $28.50 to $29, and forging billets, $32, all f.o.b. Pittsburgh, freight to destination added.

(*By Mail.*)

Notices of advances in wages by more of the leading steel companies and the settlement of the soft coal strike in the Pittsburgh district are the two interesting events in an otherwise quiet week. The greatest percentage of advance has been given to the laborers in the plants of the steel companies, who have been raised from $1.60 to $1.75 per day. Other employers will no doubt announce advances, but the trade is at a loss to understand why they are being made, when the outlook in the trade is none too bright. The soft coal strike, which lasted about one month, was settled April 29. The men have secured a substantial advance in wages over the old rate, and the scale has been settled for two years. Aside from the above, nothing of interest has developed. It is becoming the general belief that prices on pig iron have reached such a low point that they cannot go further down. It is pointed out that with present high costs of manufacture the selling prices of pig iron leave little or no profit to the merchant blast furnace. Neither makers nor dealers are trying to force sales, realizing that under present conditions it would be useless to do so. There is a fair inquiry for small lots of Bessemer billets and sheet bars, but a good deal of steel is still being offered for resale, and some low prices have been made. Open hearth steel continues scarce and there is now a spread of fully $1.50 a ton between Bessemer and open hearth in favor of the latter, which is very unusual. The official announcement by the Whitaker-Glessner Company that it will build its own open hearth plant at Wheeling, to make sheet and tin bars for supplying its mills, is of special interest, as this concern has been a very large buyer. New orders for finished iron and steel are light, but specifications keep up fairly well. There is not much incentive to buy at present, and a good deal of material is still due consumers from the mills. There are some concessions in prices being made in black and galvanized sheets and in iron and steel pipe, the latter trade having been very dull for some time. The scrap market is in bad condition, prices being low and with little or no demand. The coke trade is also very quiet and a further reduction in output has been made.

Ferromanganese.—There is no new inquiry and the low prices being made by some of the dealers do not bring about any large sales. A good deal has been bought by dealers which must be specified for, and this largely explains the low prices ruling. We quote 80 per cent. foreign for reasonably prompt delivery at $40.50, Baltimore, the freight to Pittsburgh being $1.95 a ton.

Ferrosilicon.—The market is weak, with no sales of importance. We quote 50 per cent. at $59 to $59.50, Pittsburgh; 10 per cent. $23.90; 11 per cent., $24.90, and 12 per cent. $25.90, all f.o.b. Pittsburgh.

Muck Bar.—The market is lifeless. We quote best grades of muck bar, made from all pig iron, at $28.50 to $29, Pittsburgh.

Rods.—Some inquiry is in the market for small lots of open hearth and chain rods, but most large consumers are covered by contracts placed last fall. Specifications against these contracts are coming in fairly well. We quote Bessemer open hearth and chain rods at $32, Pittsburgh, but on a firm offer, for a desirable tonnage, this price might be shaded.

Skelp.—There is a fair amount of inquiry for grooved and sheared iron, but not much new demand for steel skelp. For ordinary widths and gauges we quote grooved steel skelp at 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.80c., and sheared iron skelp, 1.90c., all f.o.b. mill, Pittsburgh.

Steel Rails.—The Carnegie Steel Company is entering a fair sized tonnage in standard sections, made up of orders ranging from 200 tons up to 1000 tons, but has not taken any large contracts for some time. The company sold last week upward of 3000 tons of light rails and received good specifications against old contracts. We quote steel axles at 1.75c. to 1.80c. and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 to 45 lb., $27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at $28, at mill.

Plates.—The week has been very quiet. No large orders for steel cars have been placed. The Pressed Steel Car Company has a new dump car about ready for the market which will be tested this week. With actual orders now on their books, together with certain contracts that will likely be placed shortly, the steel car companies are assured of pretty full work for the next two or three months. Orders for plates from the general trade are fairly good and the leading mills are well filled for the next 90 days. We quote ¼-in. and heavier plates at 1.55c., Pittsburgh, but to meet the competition of one or two of the Eastern mills this price is sometimes shaded.

Structural Material.—Inquiries are in the market for a good deal of bridge material, but actual work is coming out very slowly. There is a disposition on the part of large interests to hold back contracts, in the belief that the present price of structural steel cannot be maintained unless there is soon an improvement in the steel trade. The McClintic-Marshall Construction Company has taken about 1500 tons of bridge work and the American Bridge Company about 4000 tons for buildings in the East. The general situation is quiet, and the mills are making prompt deliveries. We continue to quote beams and channels up to 15-in. at 1.50c., and for small lots 1.55c., Pittsburgh.

Sheets.—The heavy decline in spelter and the fact that two or three of the larger independent sheet mills are out for orders are responsible for the present cutting in prices of $1 to $2 a ton on black sheets and $2 to $3 a ton on galvanized. The American Sheet & Tin Plate Company and a number of the large independents are pretty well filled up to October 1, and hold prices firmly. There is still an active demand for blue annealed and electric sheets, and on these grades the mills are behind in deliveries. Regular prices are printed on a previous page.

Tin Plate.—The Jones & Laughlin Steel Company expected to start up six of the 12 tin plate mills in its first unit May 2, but it is now announced that they will not start until next week. The McKeesport Tin Plate Company will start up five additional mills next month, and the Philipps Sheet & Tin Plate Company, at Weirton, W. Va., is now operating all of its 10 new tin mills. The new demand for tin plate continues active and most of the leading mills are full of work up to October 1, and several have taken contracts for delivery in last quarter. The advance in wages by the American Sheet & Tin Plate Company went into effect May 2. We quote 100-lb. cokes at $3.60 per base box, f.o.b. Pittsburgh.

Bars.—The implement makers and the wagon and car builders, who are the largest consumers of steel bars, are moving slowly this year in placing contracts for delivery commencing July 1, having evidently decided that nothing will be lost by taking this course. All the leading steel bar mills are filled with work for the next 90 days or longer, and specifications against contracts are coming in freely. A fair amount of new business is being placed in iron bars, but prices are weak, and the railroads, who are usually the heaviest buyers, are placing orders but sparingly. We quote steel bars at 1.45c. and iron bars at 1.55c. to 1.60c., Pittsburgh.

Hoops and Bands.—The new demand is quiet, but specifications against contracts are coming in at a fairly satisfactory rate. Prices are not as firm as they were some time ago, several of the mills being more anxious for orders. We quote steel hoops for forward delivery at 1.50c. to 1.60c., while for prompt shipment as high as 1.65c. is obtainable. Steel bands are 1.40c. to 1.50c. on contracts for forward delivery and 1.60c. to 1.65c. for reasonably prompt shipment, these carrying steel bar card extras.

Spelter.—Prices have shown another sharp decline. We quote prime grades of Western at 5c., East St. Louis, or 5.12½c., Pittsburgh.

The Iron and Metal Markets

Spikes.—New orders for railroad spikes are coming along slowly and mostly in small lots for repair work. The demand for boat spikes and for small railroad spikes is fairly active. We quote standard sizes of railroad spikes, 4½ x 9-16 in. and larger, at $1.70 and Western shipment and $1.75 for local trade. Boat spikes are firm at $1.75, base, and small railroad spikes at $1.75, base. These prices are for carload and larger lots.

Shafting.—This continues to be one of the most active lines on the whole list of finished material, the new demand being heavy and specifications against contracts coming in freely. All the shafting makers are full of work and are behind in orders, while prices are very firm. Regular discounts of 55 per cent. off in carloads and 50 per cent. in less than carloads, delivered in base territory, are being firmly held.

Rivets.—The new demand for rivets is only fair, but consumers are taking out material on old contracts quite freely. The demand for structural rivets is stated to have fallen off materially.

Wire Products.—The market is not active, the new demand being much lighter than expected at this season, while specifications are not coming in as freely as anticipated. Regular prices on wire nails and wire continue to be shaded about $1 a ton in some cases, but several of the leading makers state that they are not meeting this competition. Regular prices on wire products are as follows: Wire nails, $1.85 in carload and larger lots; painted barb wire, $1.85; galvanized, $2.15; annealed fence wire, $1.65; galvanized, $1.95, and cut nails, $1.85, all f.o.b. cars, Pittsburgh, usual terms, with full freight to destination added.

Merchant Pipe.—This trade continues quiet, and none of the leading pipe mills has enough business on its books to run to full capacity. The demand is especially dull in the butt weld sizes, but on lap weld the mills are fairly busy. Discounts on iron and steel pipe, printed on a previous page, are being slightly shaded in some cases.

Boiler Tubes.—A fair demand is reported for locomotive tubes, but trade is very slow in merchant tubes. There is some unevenness in discounts, which are printed on another page.

Coke.—The coke trade continues in very unsatisfactory condition, and with the coming shutdown for different periods of a number of blast furnaces on account of overproduction of pig iron, it does not seem that much improvement can be expected in the demand for furnace coke for some time. The inquiry for foundry coke is also light, and it is said that in some cases both furnace and foundry coke have been sold for spot shipment below the cost of making it. Several inquiries are in the market for blast furnace coke for last half of the year delivery, but buyers' offers are based on about $1.75 a net ton for coke running under 1 per cent. in sulphur. Standard makes of such coke are held at about $1.75 for coke that is loaded on the cars and must be moved, while on contracts for last half delivery most operators quote $2 a ton, but it is possible that $1.90 might be done. Best makes of 72-hr. foundry coke are held at $2.25 to $2.75 per net ton at oven. The output of coke has been heavily restricted. Last week the Upper and Lower Connellsville regions turned out 425,152 net tons.

Scrap.—Little material is moving from dealers to consumers and the scrap trade is somewhat demoralized. However, the settlement of the soft coal strike and the fact that prices of scrap have reached such a low ebb are expected to result in at least a heavier demand in the near future. We have again reduced quotations on some lines of scrap from 25c. to 50c. per ton. Dealers quote about as follows, per gross ton, for delivery at Pittsburgh or elsewhere as noted:

Heavy steel scrap, Steubenville, Follansbee, Monessen and Pittsburgh	$15.50 to $15.75
Heavy steel scrap, Sharon, Pa., delivery	15.25 to 15.50
No. 1 foundry cast	15.25 to 15.50
No. 2 foundry cast	14.00 to 14.25
Bundled sheet scrap, at point of shipment	12.00 to 12.25
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	16.75 to 17.00
No. 1 railroad malleable scrap	15.25 to 15.50
Grate bars	10.75 to 11.00
Low phosphorus melting stock	19.50 to 20.00
Iron car axles	25.50 to 26.00
Steel car axles	22.00 to 22.25
Locomotive axles	26.50 to 27.00
No. 1 busheling scrap	13.75 to 14.00
No. 2 busheling scrap	10.50 to 10.75
Old car wheels	15.00 to 15.25
Sheet bar crop ends	16.25 to 16.50
Cast iron borings	9.00
Machine shop turnings	11.00

The directors of the Woodward Iron Company held their annual meeting at Woodward, Ala., last week. It is understood that large improvements, which have been under contemplation, were sanctioned by the directors, to be carried on in the near future.

Chicago

FISHER BUILDING, May 4, 1910.—(*By Telegraph.*)

The Western market presents an array of conflicting indications. March and April showed the largest production of finished steel products in the history of the Chicago district without satisfying the current demand. Manufacturing consumers continue to pay premiums for merchant mill products which they obtain from store, because they cannot get deliveries from the mills, and in many branches of trade, like hardware, the manufacturers are unable to keep up with the demand. Crop conditions on the whole are favorable, an opinion which is confirmed by the recent decline in cereal prices. The railroads show profitable earnings, and general business conditions are good. On the other hand, there is a general hesitation in both iron and steel in purchases for forward delivery. Last week was the most disappointing in a year or more to the fabricating interests, as none of the many building contracts pending in the West was closed and the railroads also failed to close any notable bridge tonnage. The plow manufacturers have assumed an indifferent attitude regarding their bar contracts for the coming year, although they are buying bars from store to complete current business. The railroads will wait for more definite information regarding crops before they increase their purchases and there is a general slackening all round in purchases for future delivery, although there is some improvement in the jobbing demand for wire products. The scrap market continues to record lower prices and buyers are generally indifferent to the bargains offered them as they have stocks for current needs. Current business in metals is good but limited to nearby deliveries. There is a feeling in the Chicago market that the decline in pig iron is responsible for the general hesitation to buy finished products on forward contracts. A decline in pig iron has always been understood by investors and the public as a sign of a reaction in general business conditions. The enormous increase in recent years in furnace capacity is supplying the country with all the iron needed in a period of general prosperity for the first time in the history of the country, and, while consumption is larger than ever before, the reaction in prices has inspired a cautious feeling among business men who watch the iron market and has checked the long established custom of forward buying.

Pig Iron.—The $12 market for Southern iron has not awakened the long expected buying movement in the West. Buyers are watching the markets a little more closely than heretofore, and a large amount of business is pending in the form of indefinite inquiries. Only an occasional sale of any moment is reported. A stove interest at Aurora, Ill., is reported to have bought 3000 tons of Southern iron for last half delivery, and a manufacturing interest at Sterling, Ill., has bought 1000 tons. Other transactions, usually for smaller amounts, have been closed, but the aggregate of the business done is small and shows no general movement on the part of buyers to cover their requirements for the last half. The market for Northern iron is even more quiet, which $17 at furnace reported as the minimum, equal to the price quoted below for Chicago delivery. On this basis for Northern iron, Ohio furnaces are effectively shut out of this market, even on deliveries to river territory west of Chicago. There are persistent rumors that Southern iron is being sold below $12, but in the only cases that can be confirmed it appears that slight concessions from $12 have been made for delivery during the current quarter. Analysis iron has been sold at $11.50, but running below No. 2 in silicon and high in sulphur. Well posted men in this market hold the opinion that the consumption by melters has been fully equal to the enormous production of the past four months. Since last July there has been a net decrease of about 500,000 tons in furnace stocks in the United States. In July last year stocks on furnace yards amounted to about 1,600,000 tons, decreasing to about 900,000 tons at the end of December. In the past four months there has been an increase of about 200,000 tons in the stock in furnace yards, but it is believed that foundry stocks have decreased two or three times this amount. During the fall buyers anticipated a severe car shortage and took advantage of the low prices made last summer to accumulate more than normal stocks, so that the large decrease in furnace stocks was in fact chiefly a transfer of iron from furnace yards to foundry yards. The steady decline in prices since the first of the year has led melters to use up their stocks, and the decline in prices has been accelerated by the independent position of the foundry buyers which has enabled them to wait. It is understood that there is no material change in furnace stocks in the Chicago district, while in other territory there has been a decrease. In the valleys and in the South there has been a considerable increase in furnace stocks, and it is estimated that Southern furnace yards are now carrying about 200,000 tons, equal to one month's production. The stocks of the entire country amount to less than two weeks' production of all furnaces, but consist principally of foundry

The Iron and Metal Markets

grades. The following quotations are for May and June shipment, Chicago delivery:

Lake Superior charcoal	$19.00 to $19.50
Northern coke foundry, No. 1	17.75 to 18.25
Northern coke foundry, No. 2	17.25 to 17.75
Northern coke foundry, No. 3	16.75 to 17.25
Northern Scotch, No. 1	18.25 to 18.75
Southern coke, No. 1	16.60 to 17.10
Southern coke, No. 2	16.35 to 16.85
Southern coke, No. 3	16.10 to 16.60
Southern coke, No. 4	15.85 to 16.35
Southern coke, No. 1 soft	16.60 to 17.10
Southern coke, No. 2 soft	16.35 to 16.85
Southern gray forge	15.60 to 16.10
Southern mottled	15.35 to 15.85
Malleable Bessemer	17.25 to 17.75
Standard Bessemer	19.90 to 20.40
Jackson Co. and Kentucky silvery, 6%	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8%	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10%	21.90 to 22.40

(*By Mail.*)

Billets.—The situation is unchanged in this market, as none of the local mills has billets to offer.

Rails and Track Supplies.—Orders for standard rails taken for Chicago mills last week amounted to about 5000 tons of open hearth rails. It is understood that there are inquiries pending from Western roads for about 40,000 tons, part of this business having been pending for some time. The railroads continue very liberal buyers of track supplies. We quote standard railroad spikes at 1.80c. to 1.90c., base; track bolts with square nuts, 2.50c. to 2.60c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., $27; 30 to 35 lb., $27.75; 16, 20 and 25 lb., $28; 12 lb., $29, Chicago.

Structural Material.—The fabricating interests report that not a single contract of any moment was closed last week in Western territory. There are scores of large building projects pending, and in many cases the contracts for large buildings have been postponed several times during the past winter. Western roads inquired several weeks ago for large lots of bridge material, on which prompt acceptance of bids was expected by the fabricating interests, but nothing has been done. The investors who erect buildings and the railroad officials who buy bridge material naturally expect lower prices, because of the fall in pig iron. From the high point last fall for plain material for prompt shipment, however, the price quoted in this market has already been corrected to equalize the reduction in price of pig iron. Material for prompt shipment was bringing a premium last fall of at least 15 cents per 100 lb. above the current market price. While investors are holding off there is a steady accumulation of pending business for new steel buildings, railroad bridges and other branches of the fabricating trade. Three new railroad projects which are in prospect in the West will require about 100,000 tons of material. These are the new Union Depot in Chicago and the union terminals at Kansas City and St. Paul. We quote plain material this week in line with the quotations which have prevailed for some time in the Pittsburgh market, namely, from mill 1.68c. to 1.73c., Chicago; from store, 2c., Chicago.

Plates.—A fair amount of business was booked last week from car builders for plates and shapes. Deliveries on car material are improving. Although the plate mills of the country have been running short of their theoretical capacity, there has been constant complaint since last fall that the construction of steel cars was delayed by inability to get materials from the steel mills, and it is understood that new steel car orders from the railroads have been placed the past winter at a rate about equal to the actual capacity of the car shops. With improved deliveries of material, however, the car shops will be able to take care of more business. There is a good current demand for tank and universal plates. We quote mill prices at 1.68c. to 1.73c., Chicago; store prices, 2c., Chicago.

Sheets.—The continued weakness in spelter is developing corresponding concessions in prices of galvanized sheets. The market appears to be holding steady, however, in black and blue annealed sheets, although the mills are not booked so far ahead as they were last winter, owing to the general inclination of buyers to purchase only for nearby deliveries. We quote as follows, Chicago: No. 10 annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 2.90c. to 3c.; No. 28 galvanized, 4c. to 4.10c.

Bars.—The plow manufacturers have adopted a more diffident policy regarding their requirements for the coming year than they manifested a couple of weeks ago. Some of them have bought about half their yearly requirements on contracts covering six months or less, with the intention of taking a chance on any advance in the market, but there is no general buying movement as yet in this industry excepting on special lines of agricultural steel. The decline in the pig iron market is taken by many large buyers as an indication that boom prices need not be feared in finished materials. The soft steel bar mills, however, would welcome any check in specifications at this time in the hope that it may lessen the dissatisfaction which has prevailed for the past six months among customers who cannot get the deliveries they need. Meantime, while the plow manufacturers profess indifference regarding the future, they are buying heavily from store to complete goods for their current season. They are also increasing their use of hard steel bars. The bar iron market continues quiet, although there is a fair volume of new business. Subject to the usual delay in delivery of soft steel bars, we quote as follows: Soft steel bars, 1.63c. to 1.68c.; bar iron, 1.50c. to 1.55c.; hard steel bars rolled from old rails, 1.50c. to 1.55c., all Chicago.

Rods and Wire.—Industrial buyers are now able to contract for their requirements for six months, but the jobbing trade continues under the 60-day limit. It is understood that specifications during April amounted to about 5500 tons per day for the leading interest, which is very close to a normal volume of business and shows that the stocks accumulated last fall and winter by jobbers and dealers are passing into consumption. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.83c.; wire nails, 2.03c.; painted barb wire, 2.03c.; galvanized, 2.33c., all Chicago.

Merchant Steel.—While the merchant mills are not booking as much new bar business for forward delivery as they were taking some time ago, the spot demand for merchant steel shows no signs of relaxing. Mill customers continue to buy from store a large amount of material which they cannot get direct from the mills in time for their requirements. The buyers of special agricultural steel are placing their contracts for their next business year, beginning July 1.

Cast Iron Pipe.—The municipal water pipe contract at St. Louis for 2100 tons was not let last week, owing to a technical error in the bids. The United States Cast Iron Pipe & Foundry Company was awarded a letting of 3800 tons at Kansas City, Kan. At Grand Rapids, Mich., a contract for a year's supply, estimated at 800 tons, was let to the Lynchburg Foundry Company. The railroad trade is quiet, but the gas companies through the West are figuring on considerable new business. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $28.50; 6 to 12 in., $27.50; 16-in. and up, $26.50, with $1 extra for gas pipe.

Metals.—Copper and spelter have both shown a pronounced decline. In the case of copper there is a good current demand for spot or prompt shipment, and consumption appears to be normal in this territory, but buyers are indifferent regarding metal for forward delivery. As to spelter, the drop in price the past week has not brought out any business of moment. Large consumers are able to buy around 5c., East St. Louis. Buyers generally, however, seem to take the view that the decrease in consumption may have a tendency to hold the price in check, just as the very heavy consumption by wire and sheet mills last fall was responsible for the high prices which were maintained then. A reduction of ¼c. is announced in sheet zinc. We quote Chicago prices as follows: Casting copper, 13c.; lake, 13¼c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 33¾c.; small lots, 35c.; lead, desilverized, 4.35c. to 4.40c., for 50-ton lots; corroding, 4.60c. to 4.65c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.30c. to 5.35c.; Cookson's antimony, 10⅜c., and other grades, 9¾c. to 10¼c.; sheet zinc is $7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13¼c.; copper bottoms, 11¼c.; copper clips, 13¼c.; red brass, 12¼c.; yellow brass, 9½c.; light brass, 7c.; lead pipe, 4¼c.; zinc, 4½c.; pewter, No. 1, 24c.; tin foil, 26c.; block tin pipe, 30c.

Old Material.—The scrap market has felt the weight of depressing business conditions the past 10 days. Receipts from the country are large and several of the railroads which have carried large stocks of scrap have been selling quietly to dealers. These heavy offerings of material in an indifferent market have depressed prices in nearly every line of scrap. A lot of 3000 tons of rail crop ends has been going begging recently at about $2 below the prices quoted a month ago for this material, which usually commands a considerable premium over heavy melting steel. There is very little demand for steel scrap, as the steel mills are not getting much new business, and they have stocks of scrap which cover the finished material that they are under contract to manufacture. The bar iron mills are buying only at concessions in prices, and this condition is forcing down the price of wrought and busheling scrap. Turnings and borings are lower and not in much demand. Foundry buyers, however, are taking small lots of cast and malleable scrap when offered them by dealers and such material is selling better and holding steadier than scrap going to mills. The market for car wheels is nominal, as the local

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foundries are not buying. Following prices are per gross ton, delivered, Chicago:

Old iron rails	$18.00 to $18.50
Old steel rails, rerolling	17.50 to 18.00
Old steel rails, less than 3 ft	15.00 to 15.50
Relaying rails, standard sections, subject to inspection	24.00 to 25.00
Old car wheels	16.00 to 16.50
Heavy melting steel scrap	13.75 to 14.25
Frogs, switches and guards, cut apart	13.75 to 14.25
Shoveling steel	13.00 to 13.50

The following quotations are per net ton:

Iron angles and splice bars	$15.50 to $16.00
Iron car axles	20.50 to 21.00
Steel car axles	21.00 to 21.50
No. 1 railroad wrought	13 25 to 13.75
No. 2 railroad wrought	12.25 to 12.75
Springs, knuckles and couplers	13.00 to 13.50
Locomotive tires, smooth	18.00 to 18.50
No. 1 dealers' forge	11.50 to 12.00
Steel axle turnings	10.00 to 10.50
Machine shop turnings	8.50 to 9.00
Cast and mixed borings	5.50 to 6.00
No. 1 busheling	11.00 to 11.50
No. 2 busheling	8.50 to 9.00
No. 1 boilers, cut to sheets and rings	9.50 to 10.00
No. 1 cast scrap	13.50 to 14.00
Stove plate and light cast scrap	11.50 to 12.00
Railroad malleable	13.50 to 14.00
Agricultural malleable	12.00 to 12.50
Pipes and flues	10.00 to 10.50

Philadelphia

PHILADELPHIA, PA., May 3, 1910.

Still lower prices for pig iron have not induced any material business, as buyers are not convinced that the bottom has been reached. Curtailment of production goes on. Three furnaces in this district—one Warwick, one Empire and one Thomas—have gone out, and preparations are being made to blow out three and probably four more stacks. With production sharply reduced the market will, no doubt, take on a better tone. In the meantime sellers are inclined to aid the movement to get the market on a firmer basis by reducing prices to what is now considered, in view of present costs, as the absolute bottom level; one at which some producers to do business must sell at a loss. In finished materials the demand has been irregular, hesitancy still being shown in placing business, owing largely to the uncertainty which has prevailed in crude materials. Billets and sheets are the strongest on the list; plates and shapes have been fairly active, but prices are not particularly strong. Old materials are decidedly weaker; prices have receded on all the principal grades, with consumers showing practically no interest in the market.

Pig Iron.—Purchases have been unimportant, and the bulk of the business has been confined to the foundry grades. Prices show quite a varied range owing to the position of the different sellers. While $17.25 to $17.75, delivered, would probably represent about the usual range for standard eastern Pennsylvania No. 2 X foundry, some sellers express a willingness to accept business at $17 for delivery during the second and third quarter and might be induced to take the same price for second half. In Virginia foundry $17.50, delivered, has been done for moderate lots of No. 2 X for shipment during the next few months, and it is stated that this price can be shaded, although some sellers who are pretty well sold up hold at $17.75 for second quarter. There has been a slightly better movement in some special grades of foundry iron, charcoal iron particularly, an aggregate of some 2000 tons having been sold to car wheel makers. The cast iron pipe foundries are still feeling around for iron, and it is reported that some small blocks of low grade have been purchased. Southern iron is being freely offered at $12, Birmingham, for No. 2 foundry, although but few sales have been announced. The movement in forge iron has been very sluggish, rolling mills showing but little interest in the market; one sale, however, of a block of several thousand tons to a mill up the State has been made at a price close to $16.50, delivered. This figure could no doubt be shaded 50c. a ton on less well known brands. Heavier offerings of basic iron are being made, principally by producers outside this territory. While there has been no business of importance transacted, $17, delivered, could easily be done, and this figure could no doubt be shaded on desirable business, although consumers are for the most part well covered, and owing to decreased consumption are either holding back deliveries or accumulating iron on their yards. A scattered demand for low phosphorus iron is reported, with small sales at the market. The scarcity of low phosphorus ores holds prices firmly on this grade. The general range of quotations is somewhat wider, although more disposition is shown by a number of sellers to accept the same prices for either prompt or moderate forward delivery. A tendency to ask for bids rather than quote open concessions is being shown. For delivery in buyers' yards in this territory, covering the second and in some cases the third quarter, the following range of quotations about represents the market:

Eastern Pennsylvania, No. 2 X foundry	$17.00 to $17.75
Eastern Pennsylvania, No. 2 plain	16.50 to 17.25
Virginia, No. 2 X foundry	17.50 to 17.75
Virginia, No. 2 plain	17.25 to 17.50
Gray forge	16.00 to 16.50
Basic	17.00
Standard low phosphorus	23.00 to 23.25

Ferromanganese.—Indications of a better movement are in sight, inquiries for some good tonnage for forward delivery being reported. Sales, however, have been very light, confined to small lots for prompt shipment, at prices ranging from $41 to $41.50, Baltimore.

Billets.—Makers in this territory report a very satisfactory run of business for near future delivery; mills are being operated at full capacity, although the amount of forward business on order books is not large, particularly for rolling steel. Some round lots of forging billets for third quarter have been recently booked. Prices for basic open hearth rolling billets are firmly maintained at $30, delivered in this territory; forging billets are quoted at $32 to $34, Eastern mill, dependent on analysis and specification.

Plates.—Irregularity in the demand continues. The bulk of the orders received have been small, although some pretty fair specifications for bridge plates have been entered. An increased demand for boat plates is anticipated, several orders for vessels, covering some 2000 tons of plates, have been practically placed, while others estimated as requiring about 6000 tons are still under negotiation. The aggregate business taken is still below mill capacity and few producers are operating in full. Some mills name 1.70c., delivered, for ordinary plates, but others maintain a 1.75c. basis, except in instances where competition is close.

Structural Material.—Contracts for the hot metal bridge for the Alan Wood Iron & Steel Company, requiring about 1300 tons, and for the Muncy Building, Baltimore, 1000 tons, have been placed, as have also some smaller building propositions. The contract for the Philadelphia & Reading office building has been let, but the structural work has not yet been placed. Miscellaneous business is in fair volume. Prices are not strong, particularly for fabricated work. For plain shapes delivered in this territory 1.65c. to 1.70c. is named.

Sheets.—Mills report a continued heavy demand, and, working at full capacity, find it difficult to keep pace with deliveries wanted by consumers. A somewhat greater volume of forward business is noted. Prices are firm and unchanged, the following range being quoted for near future deliveries: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3c.; No. 27, 3.10c.; No. 28, 3.20c.

Bars.—The trade, particularly in iron bars, has been rather upset by the financial difficulties of the Iron & Steel Products Company, which was recently placed in receivers' hands. The various plants of the company are now idle, but may be operated by the receivers. A moderate demand for refined iron bars is reported, with prices practically unchanged, at 1.50c. to 1.60c., delivered in this vicinity. Steel bars are being inquired for in fair quantities, but deliveries are considerably delayed, quotations ranging from 1.60c. to 1.65c., delivered, according to specification.

Coke.—In view of the decreased production prices are a trifle firmer, although little business of importance is reported. Quotations for furnace coke per net ton at oven range from $1.65 for prompt shipment up to $1.90 for forward delivery. Foundry coke for reasonable delivery is quoted from $2.50 to $2.75, at oven, although for prompt delivery this figure may be slightly shaded. The following range of quotations is named per net ton for deliveries in this vicinity:

Connellsville furnace coke	$3.90 to $4.10
Foundry coke	4.75 to 5.25
Mountain furnace coke	3.50 to 3.70
Foundry coke	4.35 to 4.85

Old Material.—Prices in the active grades show a downward movement; in specialties, such as steel and iron axles, iron rails, car wheels, &c., quotations are entirely nominal, no transactions being reported, and it is not known what prices would be necessary to induce purchases. Mills usually hold off on a falling market, and offers decline when sellers endeavor to force business. The associated steel mills name $15 as their price for No. 1 heavy melting steel scrap, but make no purchases; a slightly higher level has heretofore been paid by outside steel mills, but they have also reduced their price to the figure named. Sales have been light. The following range of prices is nominally quoted for deliveries in buyers' yards in this vicinity:

No. 1 steel scrap and crops	$15.00 to $15.50
Old steel rails, rerolling	17.00 to 17.50
Low phosphorus	21.00 to 21.50
Old steel axles	21.00 to 22.00
Old iron axles	26.50 to 27.50
Old iron rails	20.00 to 20.50
Old car wheels	15.50 to 16.00
No. 1 railroad wrought	18.00 to 18.50
Wrought iron pipe	15.00 to 15.50
No. 1 forge fire	13.50 to 14.00

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No. 2 light iron	8.50 to	9.00
Wrought turnings	10.75 to	11.25
Cast borings	9.75 to	10.25
Machinery cast	15.25 to	15.75
Railroad malleable	15.00 to	15.50
Grate bars	12.50 to	13.00
Stove plate	10.00 to	10.50

Matthew Addy & Co., pig iron, ore and coke merchants, formerly located at 1317-1319 Real Estate Trust Building, Philadelphia, have removed their offices to rooms 740-41-42 in the same building.

Cincinnati

CINCINNATI, OHIO, May 4, 1910.

A better feeling is observed among consumers of crude and finished material, with a disposition to begin negotiations for definite tonnages. Some complaint is heard of slow collections. In the machinery and machine tool markets there exists an apathy which is not helped by the existing strikes among the iron molders, the carpenters and the erecting men of the structural workers. A few foundries are affected by the molders' strike, which is evidenced in the requests to furnaces to hold up shipments on iron. These, however, are not numerous. No interest is taken in the scrap markets, and coke in some districts shows further weakness.

Pig Iron.—The feature of the market for a week or more has been the movement of warrant iron, fully 10,000 tons of which have been cleaned up in that time. Several large consumers are trying to tempt Southern furnace interests into accepting business on an $11.50, Birmingham, basis, and some business at cut prices has also been put up to the Northern furnacemen. A few unimportant tonnages are credited to a large southern Ohio interest at $15.25, but $15.50 represents the minimum on Northern No. 2, which can be done, however, through the balance of the year. The largest inquiry comes from Chicago territory and is for basic, of which the buyer would take 10,000 tons if he could get it at his price. Cleveland territory is also negotiating for some malleable and foundry. A large brokerage concern in the South is corresponding with a view to acquiring a large tonnage of forge and low grades, of which offers are made, it is said, to take all that can be furnished for 60 days on a basis of $11.25, Birmingham. The largest pipe interest cleaned up a large lot of these low grades and paid in some instances, it is reported, a still higher price. A Cleveland inquiry calls for about 3000 tons of foundry iron, one-half straight foundry, the other half analysis basis. Some high manganese iron is wanted by an Ohio melter. A large automobile interest in Michigan is feeling the market. A Michigan wheelbarrow concern is also asking prices. The majority of selling interests here believe that the Southern market has reached its minimum, and that the melters putting up business of substantial size with offers of $11.50, Birmingham, means substantially that the turn is near at hand. For prompt delivery and over the remainder of the year, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote f.o.b. Cincinnati as follows:

Southern coke, No. 1 foundry	$15.75 to	$16.25
Southern coke, No. 2 foundry	15.25 to	15.75
Southern coke, No. 3 foundry	14.75 to	15.25
Southern coke, No. 4 foundry	14.25 to	14.75
Southern coke, No. 1 soft	15.75 to	16.25
Southern coke, No. 2 soft	15.25 to	15.75
Southern gray forge	14.25 to	14.50
Ohio silvery, 8 per cent. silicon	19.70 to	20.20
Lake Superior coke, No. 1	17.20 to	17.70
Lake Superior coke, No. 2	16.70 to	17.20
Lake Superior coke, No. 3	16.20 to	16.70
Standard Southern car wheel	25.25 to	25.75
Lake Superior car wheel	22.25 to	22.75

(*By Mail.*)

Coke.—The market is weak. Connellsville spot furnace grades are obtainable at $1.65 to $1.90 per net ton at oven, and on contract the asking price is $2 to $2.25. Connellsville foundry is selling at $2.25 to $2.75 and on contract, $2.40 to $2.75. Wise County spot furnace coke is obtainable at $1.75 to $1.90 and spot foundry grades $2.40 to $2.50; on contract, $2.50 to $2.75; Pocahontas cokes are quiet at $1.90 to $2 for furnace grades, and contracting is on a basis of about $2, minimum. Spot foundry brands are quotable at $2.35 to $2.50, and on contract $2.35 to $2.65 is asked.

Finished Iron and Steel.—Building and structural interests generally are wrestling with the demands of the carpenters and erection men now on strike. The latter are demanding 60c. an hour, having been getting 50c. Concerns interested announce themselves as well equipped to handle the situation, having practically all current contracts well advanced, while nothing new is coming out. Mills are making no prices for deliveries beyond third quarter. Steel bars are weak at 1.60c., delivered; structural material is 1.70c. on mill orders, and out of stock, 1.90c. to 2c. Blue annealed sheets are reported in good demand. Out of stock No. 10 is selling at 2.15c.; No. 12, 2.20c.; No. 14, 2.25c., and No. 16, 2.35c., and mills are still behind on deliveries of all sizes. April closed with little doing, but May has opened encouragingly. The McClintic-Marshall Construction Company will furnish the 700 tons required for the revised plans of the Victor Safe & Lock Company's plant at Oakley.

Old Material.—The market is still weak and dealers are not making any effort to force matters, most of them seeming content to await the turn and ship out as rapidly as possible on existing contracts. One large local interest announces enough business on its books at a desirable price to last until September or October. Mills are not inquiring, and in fact business of any kind is exceedingly light. In the absence of business prices given are nominal and are for delivery in buyers' yards, Cincinnati and southern Ohio:

No. 1 railroad wrought, net ton	$12.50 to	$13.00
Cast borings, net ton	7.00 to	7.50
Heavy melting steel scrap, gross ton	13.00 to	13.50
Steel turnings, net ton	9.00 to	9.50
No. 1 cast scrap, net ton	12.50 to	13.00
Burnt scrap, net ton	9.00 to	10.00
Old iron axles, net ton	18.00 to	18.50
Old iron rails, gross ton	17.50 to	18.00
Old steel rails, short, gross ton	15.00 to	15.50
Old steel rails, long, gross ton	16.00 to	16.50
Relaying rails, 56 lb. and up, gross ton	23.00 to	24.00
Old car wheels, gross ton	14.00 to	14.50
Low phosphorus scrap, gross ton	17.00 to	17.50

Cleveland

CLEVELAND, OHIO, May 3, 1910.

Iron Ore.—Incomplete reports from the upper lake ports indicate that the ore shipments in April were slightly over 1,000,000 tons. More than half of this ore was shipped by the Steel Corporation. The movement is expected to be light this month, as many furnace interests are not ready to take their ore. The market continues inactive, but prices are firm. We quote as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—The aggregate tonnage sold during the week was small. A slight improvement is noted in the demand for small lots of foundry iron for last half delivery. The blowing out of blast furnaces has as yet had no apparent effect, and unless conditions improve soon more are likely to be blown out. No. 2 foundry is held at $15.50, Valley furnace, for second quarter, and $15.50 to $15.75 for the last half, but there are not sufficient inquiries to test the market and it is believed that an inquiry for a round tonnage would bring out lower quotations. The majority of consumers are not ready to buy for their last half requirements. Some inquiries that have come out during the past two or three weeks have not resulted in sales, buyers feeling that they may possibly do a little better by waiting. Two sales to local foundries are reported for the last half, one a 200 ton lot and the other about 500 tons. A Michigan implement maker has an inquiry out for 1000 tons for the last half, one-half each of Northern and Southern. We note the sale of a small tonnage of No. 2 Southern at $12, Birmingham. There are reports that this price is being shaded 10c. Corrigan, McKinney & Co. announce that they expect to blow in their new Cleveland stack May 7. For spot shipment and second quarter we quote, delivered, Cleveland, as follows:

Bessemer	$17.90 to	$18.15
Northern foundry, No. 1	16.75 to	17.00
Northern foundry, No. 2	16.40 to	16.75
Northern foundry, No. 3	16.15 to	16.40
Gray forge		15.90
Southern foundry, No. 2		16.35
Jackson Co. silvery, 8 per cent. silicon	21.05 to	21.55

Coke.—Some inquiries have come out for furnace coke for last half and longer, furnaces usually asking that they be given prices on a sliding scale basis. There is practically no demand for foundry coke. Prices remain about stationary. We quote Connellsville furnace coke at $1.75 per net ton, at oven, for spot shipment and $2 to $2.15 on contract. Connellsville 72-hr. foundry coke is held at $2.30 to $2.50 for spot shipment and $2.50 to $2.75 on contract.

Finished Iron and Steel.—Specifications are fair, but only a limited amount of new business is coming out. One interest reports more activity in the steel bar market, having taken contracts during the week for over 10,000 tons from implement makers and other consumers, for deliveries until October 1 and December 1. Prices on steel bars continue firm, at 1.45c., Pittsburgh. Manufacturers in metal working lines are still busy on old contracts, but there is some complaint about the volume of new business that is coming out. The implement makers are optimistic regarding the outlook for their business. Bolt and nut manufacturers report a good demand for the smaller sized products, but the demand for heavy bolts, which comes largely from the rail-

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roads, is only fair. There is a steady demand for small lots of plates for early delivery and some of the mills that have been able to make deliveries promptly are now not promising shipments within two weeks to 30 days. Prices on plates are being shaded $1 a ton in some cases. Local fabricating shops have a large amount of small work on hand, but new work requiring a large tonnage is slow in coming out. Legislation was adopted by the Ohio Legislature a few days ago enabling the city of Cleveland to increase its municipal debt for the purpose of abolishing grade crossings, and work will be started shortly in the elimination of crossings that will require a large tonnage of structural steel, unless the legislation is vetoed by Governor Harmon. The demand for sheets is not active and prices are still being shaded on black and galvanized sheets from $1 to $2 a ton. The Carnegie Steel Company has taken a contract from the Cleveland Short Line Railway for 350 tons of steel piling. The same company has booked an order from the Cleveland Railway Company for 4500 steel ties and fastenings. The latter company will also buy 1000 tons of girder rails for replacements. The outlook for standard rail tonnage for traction purposes is better than it has been for some time. One definite inquiry is now pending for 900 tons. The demand for bar iron is only moderate. The general price quotation in the Central West is 1.50c., at mill. Business with jobbers continues good. One local warehouse dealer reports that his April sales exceeded those of any previous month since 1907.

Old Material.—The market continues dull and prices are weak. While quotations on most grades remain unchanged, these prices are largely nominal, there not being enough transactions to establish a market on some kinds of scrap. The most encouraging feature of the present situation is that local mills are not holding back on shipments, as they were during the previous few weeks. Few sales larger than carload lots are reported. The railroad lists this week include about usual tonnages from the Erie Railroad and the Pennsylvania, for which bids were asked on May 4. Prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$15.50 to $16.00
Old iron rails	17.50 to 18.00
Steel car axles	22.00 to 22.50
Heavy melting steel	13.75 to 14.25
Old car wheels	15.00 to 15.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	13.00 to 13.50
Railroad malleable	15.00 to 15.50
Light bundled sheet scrap	10.50 to 11.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.50 to $22.00
Cast borings	7.25 to 7.75
Iron and steel turnings and drillings	8.50 to 9.00
Steel axle turnings	11.00 to 11.50
No. 1 busheling	12.00 to 12.50
No. 1 railroad wrought	14.75 to 15.25
No. 1 cast	13.25 to 13.50
Stove plate	11.50 to 12.00
Bundled tin scrap	11.00 to 11.50

A new blowing engine has been installed in C Furnace of the Buffalo Union Furnace Company, and it is probable that this stack will be relined and enlarged.

St. Louis

ST. LOUIS, May 2, 1910.

Coke.—There has been only a limited inquiry for coke, with a still more limited record of sales; in fact, the market is featureless. The opinion is expressed that buyers may shortly reach a buying mood, with the output of coke heavily cut down and rumors of an advance asked by some leading Connellsville producers. Prices remain unchanged at $2.35 for prompt and $2.50 for contract standard Connellsville foundry coke per net ton, f.o.b. oven.

Pig Iron.—Representatives of large Southern interests report the booking a fair aggregate, comprising 1500 tons of No. 3 for shipment over the last half, 500 tons of high manganese, same shipment, and sales of foundry aggregating 3000 tons for scattered shipment. A sale of 1000 tons of Northern No. 2 found for last half is also reported. Considerable interest is being manifested by buyers, more especially the medium to large consumers. Some of the inquiries are for fairly large tonnage and come from both local and outside territory, and while a certain proportion is merely for keeping posted, in other cases the specifications indicate intending buyers. Sentiment as to the trend of the market is somewhat mixed. Curtailment of production, if general, is urged by some as an argument for at least holding the price steady, while others point to large stocks in producers' hands which they claim must be reduced before the curtailment would have marked effect. It is believed that most of the warrant iron is now out of the market, as it is not being offered, and it is thought to be of unimportant tonnage. No. 2 Southern foundry is being offered freely at $12, Birmingham, for any delivery prior to January 1, 1911, but in some cases furnace interests have instructed their agents to hold at $12.50 for the last half. Southern Ohio is quoted at $16 to $16.50, f.o.b. furnace.

Finished Iron and Steel.—The leading interest reports some improvement in the inquiry for standard rails. Light rails are in better demand from coal interests, which are availing themselves of the opportunity for enlargements and repairs. For bars there is a good inquiry and customers are pressing for shipment of back orders. Business in structural material is confined to miscellaneous orders from fabricators. There is a large demand for track material, particularly bolts and spikes.

Lead, Spelter, Etc.—Lead is steady at 4.25c.; spelter is lower and quoted at 5.05c., f.o.b. East St. Louis; tin is ½c. lower; antimony steady; copper is off 10c. per 100 lb. The demand for finished metals for the past week was moderate in volume.

Old Material.—It is still a waiting market, with barely enough business passing to fix prices, and these transactions are principally among dealers. Only one railroad list is reported—the Missouri Pacific of about 1000 tons. The conditions at present are unchanged, and not much relief can be looked for until the pig iron market rights itself. We continue our quotations, with the proviso that in the present weak condition prices are more or less nominal. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$15.00 to $15.50
Old steel rails, rerolling	15.00 to 15.50
Old steel rails, less than 3 ft	13.50 to 14.00
Relaying rails, standard sections, subject to inspection	26.00 to 26.50
Old car wheels	15.00 to 15.50
Heavy melting steel scrap	13.50 to 14.00
Frogs, switches and guards, cut apart	13.50 to 14.00

The following quotations are per net ton:

Iron fish plates	$14.00 to $14.50
Iron car axles	21.00 to 21.50
Steel car axles	19.50 to 20.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	12.50 to 13.00
Railway springs	12.00 to 12.50
Locomotive tires, smooth	16.50 to 17.00
No. 1 dealers' forge	11.00 to 11.50
Mixed borings	6.50 to 7.00
No. 1 busheling	12.00 to 12.50
No. 1 boilers, cut to sheets and rings	9.50 to 10.00
No. 1 cast scrap	11.50 to 12.00
Stove plate and light cast scrap	9.50 to 10.00
Railroad malleable	11.25 to 11.75
Agricultural malleable	10.00 to 10.50
Pipes and flues	9.25 to 9.75
Railroad sheet and tank scrap	8.50 to 9.00
Railroad grate bars	9.00 to 9.50
Machine shop turnings	9.50 to 10.00

The Illinois Traction Company has planned to erect a 15-story building for use as a station and for railroad and other offices, at the terminus of its system in this city. The designs for the structure are completed and have been submitted for the approval of the chief executive officers. The building will resemble in general style and size the La Salle Street Station of the Rock Island system at Chicago.

The Dimmick Pipe Company has been awarded the contract for the pipe to be used in the Water Department, aggregating $52,437.

The Emrick Power Hammer Company, St. Louis, has been incorporated; capital stock, $10,000, fully paid; incorporators, Frank C. Emrick, T. W. Remmers and C. L. Schwartz.

The American Wrapping Machine Company, St. Louis, has been incorporated; capital stock, $50,000; incorporators, H. Sterling Wilson, D. S. Brackett and M. D. Gibson.

The mining tool plant of Beall Bros. at East Alton, Ill., was destroyed by fire April 29, entailing a loss estimated at $75,000.

Birmingham

BIRMINGHAM, ALA., May 2, 1910.

Pig Iron.—Probably a total of 7000 to 8000 tons about covers the transactions in pig iron the past week, the bulk of which consisted of lots ranging from 25 to 150 tons. Conditions have about settled themselves around $12 at furnace, No. 2 foundry basis, for prompt or second quarter delivery, and $12.50 for third quarter and remainder of the year. However, there does not seem to be much anxiety manifested as to putting fourth quarter business on order books at $12.50. Some of the furnace interests here are still firmly adhering to $12.50 to $13, and while, in the main, such quotations are only nominal, there are good and sufficient reasons for holding firmly at such figures. There has been much earnest talk in the way of materially curtailing production, and it is understood, on good authority, that steps are going to be taken in that direction in the immediate future. While iron is being made and sold, yet satisfactory financial arrangements are being made whereby pro-

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ducers, when necessary, are stocking their product. It could not be fairly said that the situation shows still further weakness, but the general tendencies are not at all encouraging.

Cast Iron Pipe.—Some satisfactory lettings were closed the past week for points in Ohio, Kansas, Missouri and the far West. It is understood that some 5000 or 6000 tons were placed. There seems to be unusual activity in gas pipe. Inquiries are continuing good, and on the whole local manufacturers are quite satisfied with prospects. The pipe plants in this district are running full time and to their capacity. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12-in., average $22, with $1 a ton extra for gas pipe.

Old Material.—If there ever was a market at a standstill, it is scrap. There is practically no demand for it; even attractive prices do not seem to awaken interest on the part of buyers. Dealers themselves have about come to the conclusion that scrap is an unsafe investment, and for that reason do not seem inclined to take on more stock. Following prices, per gross ton, are nominally quoted here:

Old iron axles	$18.00 to $18.50
Old iron rails	14.00 to 14.50
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	10.50 to 11.00
No. 1 country wrought	10.00 to 10.50
No. 2 country wrought	9.50 to 10.00
No. 1 machinery	11.50 to 12.00
No. 1 steel	10.50 to 11.00
Tram car wheels	11.00 to 11.50
Standard car wheels	12.50 to 13.00
Light cast and stove plate	8.50 to 9.00

San Francisco

SAN FRANCISCO, CAL., April 27, 1910.

The buying movement on the Pacific Coast continues to increase, though in some departments business has not yet reached the volume counted on early in the season. The latter part of this month has been marked by the booking of some large orders for pipe and plates, for both of which the outlook is excellent, though the pipe business taken by the mills is still almost entirely of the larger sizes. The heaviest tonnage, both of pipe and plates for tank and riveted pipe work, is for the oil fields, and comparatively little of this business is handled by San Francisco firms. The tonnage of steel rails is fairly satisfactory, and a number of orders may be let soon for new projects. Bars are in fair demand, but recent bookings by mill interests are moderate, and supplies in store are decreasing very gradually. Fabricating orders for structural material are more numerous than at the beginning of the month, but work is still scarce and the local outlook unpromising. Prospective requirements outside of San Francisco, however, are fairly large, as plans are under consideration for a number of steel buildings in other coast cities, and considerable bridge work is projected in the country. Pig iron is very quiet, with little foundry work on hand, and low prices prevail for most descriptions of cast iron work.

Plates.—Buying of plates has been resumed on a large scale, heavy tonnage having been booked within the last two weeks, and a large amount of business is still in prospect. The activity in this department is due largely to the need of storage facilities in the oil fields, where many large tanks are being erected, and to unusual activity in riveted pipe for both oil and water lines. The Producers' Transportation Company has let contracts for the immediate construction of tanks to store 1,250,000 barrels of oil in the Kern, Coalinga and Santa Marguerita fields. There will be 45 tanks, to require about 150 tons of plates each, the contracts being placed with the Llewellyn Iron Works and the Lacey Mfg. Company of Los Angeles. The Lacey Mfg. Company has also taken a contract for 40,000 ft. of 30-in. riveted water pipe for the Riverside Water Company, Riverside, Cal. Bids have been taken by the city of San Diego for the construction of two large steel reservoirs at Point Loma and University Heights. The city of Los Angeles has also ordered a lot of riveted steel pipe. The Government has been examining sites at San Diego, where it is proposed to erect several large tanks for fuel oil for the use of the navy.

Rails.—The movement of standard sections for the month has been fully equal to that of March, though no exceptionally heavy orders have been booked. The street and interurban railroads are again coming into the market, and several contracts amounting to 1000 tons or more have been let. It is believed that several of the larger projects for new construction are getting into position for the letting of rail contracts, and a large order is expected in a few weeks for the Fresno-Hanford line, which has been talked of for the last year. There is considerable talk of new railroads in the oil fields, to afford a better outlet from Coalinga. A franchise has already been taken for a six mile line in the Coalinga field, and a report is current that the Southern Pacific will soon build a line between that town and Monterey, Cal. A line between Fresno and Coalinga is also projected, but little reliable information is available. Work has been started on the Oakland and Antioch interurban line.

Bars.—Orders booked by rolling interests are still of a rather limited nature, though the movement from store is slowly increasing. Orders from merchants are largely of a sorting-up nature, as foreign material continues to arrive. Reinforcing bars are in greater demand, as there has been some increase in reinforced concrete construction in San Francisco, and numerous large projects calling for construction of this nature are under way in the interior. There is also considerable inquiry for bars rolled from old steel rails, and a number of small mills on the coast are now operating on this material. There is no change in prices. Bars from store, San Francisco, are quoted at 2.50c. for steel and 2.30c. for iron.

Structural Material.—The local market is characterized by continued absence of large orders, though several small contracts have been let within the last week. One or two local shops have a fair amount of work, but the majority have nothing of any consequence, and Eastern fabricators have taken little interest in most of the work recently let. It is reported that very low prices have been made for fabricating on some of the jobs. A small order has been placed for the copper smelter at Coram, Cal. The Central Iron Works has a small job for the Mission Turn Verein hall. The contract for the Geo. J. Birkel building at Los Angeles was let to the Llewellyn Iron Works. A contract for the Laura Hirschfeld building, requiring about 375 tons, including 250 tons of Bethlehem shapes, has been let to the Ralston Iron Works. Bethlehem shapes will also be used in Swift & Co.'s building, to be fabricated by the Western Iron Works, and the Central Iron Works has a contract for about 75 tons of Bethlehem girders for the Steinhart apartments. A contract will be let shortly for a new bridge at Portland, Ore., to require about 1200 tons. A temporary city hall for San Francisco is to be built of reinforced concrete. A donation has been made for a $400,000 addition to St. Luke's Hospital. Contracts will probably be let in May for the Ben Selling building at Portland, Ore., and the Tacoma Commercial Club, Tacoma, Wash. Plans have been completed for the Bakersfield, Cal., court house, and the contract will probably be let early in June. It will require about 900 tons. A small steel building is to be erected at Petaluma, Cal. A large city hall for Oakland, Cal., is now assured, but contracts are not likely to be let before the summer of 1911. Plans are also being discussed for a large auditorium in that city. The prospective requirements of the entire coast are fairly large, but there is little ground for expecting an active summer in San Francisco. Structural cast iron is comparatively cheap here, and is being used to a considerable extent. Beams and channels, 3 to 15 in., from store, San Francisco, are quoted at 2.70c.

Pig Iron.—The principal feature in the market at present is the prospective reduction of the working day for iron molders, which local foundry operators regard with serious apprehension. The foundries have little business on hand, and it is feared that the new labor schedule will limit operations still further. There is accordingly no disposition to order pig iron for future delivery, and as the immediate needs of most melters are already provided for, the market is extremely quiet. Prices show little change, but the market lacks firmness. Quotations are as follows: To arrive, English foundry iron, $23 to $23.50; Scotch, $25 to $25.50; Continental, $23; Southern, $23.

Cast Iron Pipe.—The tonnage booked for coast delivery continues large, and there is no sign of a decrease in the immediate future. Orders for a fair tonnage are being placed by the gas companies in San Francisco and vicinity, and Portland, Ore., will be in the market this year for 50,000 to 80,000 ft. of water mains. Numerous orders are also being placed by the gas companies in southern California, the Los Angeles Gas & Electric having placed a contract for 500 tons with the Lynchburg Foundry. The San Francisco contract for cast iron specials has been let to the Enterprise Foundry Company of this city on a bid of $89,000. The Pacific Gas & Electric Company expects to lay pipes in a new district of Fresno, Cal., this summer. The Bay Cities Water Company, Oakland, Cal., is taking figures on about 30,000 tons, but no contract is expected before next year. The town of Colville, Wash., has taken bids on 3000 ft. of 4-in. pipe.

Merchant Pipe.—Most requirements of small sizes are being filled from store, and while some of the local merchants have brought their stocks down to moderate size others are still carrying a large surplus above current requirements. It is reported that merchants have been endeavoring to effect a further advance in price, but have so far been unsuccessful. The largest local order placed re-

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cently was for 7 miles of 16-in. pipe for the San Francisco Gas & Electric Company, taken by the National Tube Company. The town of Chico, Cal., has ordered a moderate tonnage, and the town of Vallejo, Cal., is preparing to issue bonds for a water pipe line. Portland, Ore., is taking bids on a lot of wrought pipe for the city parks, and the city of Seattle, Wash., is also in the market. Otherwise the principal tonnage is for the oil fields, where additional purchases are being made in connection with pipe lines. Several new projects in that section are under discussion. It is reported that the Southern Pacific interests will build a line of 10-in. pipe from Bakersfield to Mojave over Tehachapi pass. A 25-mile line is planned for the Silver Queen mines. A company is now being organized, in which H. J. Crocker of San Francisco, J. I. Lamprecht of the National Refining Company, and T. N. Barnsdale, are interested, to run a line from the oil fields to Oilport, on San Luis Bay.

Old Material.—Owing to the uncertainty of the local foundry business, cast iron scrap is rather quiet at the moment, though it finds a fair demand in other parts of the coast. Shipments are being made from the Hawaiian Islands to Los Angeles foundries. The local market, however, is a little weaker than last month. Steel melting scrap is quiet, but with little surplus on the market prices are well maintained. Old rails are moving freely, as offerings are liberal and there is a continued demand from local rolling interests. Prices are quoted as follows: Cast iron scrap, $17 to $17.50 per gross ton; steel melting scrap, $10 per gross ton; railroad wrought scrap, $14 per net ton; rerolling rails, $14 per net ton.

James Mason, of the by-product plant of the Lackawanna Steel Company, has been looking over the Western Steel Corporation's works at Irondale, Wash., with a view to the establishment of a by-product plant there.

The Berger-Carter Company, now at 503 Mission street, San Francisco, is preparing to move into new quarters in the Brandenstein building, corner Mission and First streets.

The Noble Electric Steel Company's smelter at Heroult, Cal., resumed operations last week.

The Western Pipe & Steel Company of California has been incorporated at Los Angeles, with a capital stock of $500,000, by W. F. Howard, J. A. Talbot, W. G. Talbot, A. C. Dunham and H. U. Lunceford.

Buffalo

BUFFALO, N. Y., May 3, 1910.

Pig Iron.—New business for the week has been exceedingly light, although shipments on contracts have been large. Consumers still hesitate regarding placements for forward requirements, waiting assurance as to the rock bottom point in prices before closing contracts; a considerable proportion of inquiries received evidently being in the nature of feeling the market. Most of the foundries in this district are reported as being crowded with work, car shops and car wheel foundries especially having had a large influx of orders. In consequence, some of the foundries have already taken up their full specifications for first half deliveries and commenced on last half where forward delivery contracts have been placed. The rate of delivery on foundry grades, if kept up, in connection with curtailment in production, must, it would seem, bring about improved conditions for the seller in due course. Prices are still ebbing, however, and some business is reported to have been taken slightly under those reported for last week, although many furnacemen are declining to accept business at prices at present obtainable. One order of about 1500 tons of No. 3 foundry is stated to have been taken at $15.50, which is 25c. per ton under the current market. We quote as follows, per gross ton, f.o.b. Buffalo, for delivery through the year:

No. 1 X foundry	$16.25 to $16.75
No. 2 X foundry	16.00 to 16.50
No. 2 plain	16.00 to 16.25
No. 3 foundry	15.75 to 16.00
Gray forge	15.75 to 16.00
Malleable	16.00 to 16.75
Bessemer	17.50 to 18.00
Basic	16.50 to 17.00
Charcoal	19.25 to 19.75

Finished Iron and Steel.—Most of the local agencies report that the specifications received and tonnages placed in the open market for all lines of finished products held up well for the month of April, totaling about the same as for the preceding month, the showing in steel bars and small shapes being particularly good. The demand for cold rolled steel and for open hearth forging steel was also quite active, and activity in all these lines was well maintained the past week. Structural material remains quiet, but considerable building activity is in sight as indicated by projects now on the boards. Plans are under way for the new Washington Street Market, to be erected by the city, covering an entire square and involving a large tonnage of structural material. Specifications will be out the latter part of this week for steel for a theatre to be built by the Metropolitan Amusement Company on Broadway, this city, about 100 tons, and for the Hotchkiss Building, Washington street, 450 tons. The Lackawanna Bridge Company has taken 50 tons of bridge material for Michigan Central viaduct work at Niagara Falls, Ont. The National Construction Company, Syracuse, has received contract for 150 tons for a new factory for the Rome Mfg. Company, Rome, N. Y., and the American Bridge Company, it is reported, is to furnish the steel for the factory addition for the Spargo Wire Cloth Company in the same city.

Old Material.—The market continues stagnant, with practically no demand from consumers and no indications of a resumption of activity. Prices are nominal. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$15.00 to $15.50
Low phosphorus steel	19.00 to 19.50
No. 1 railroad wrought	16.00 to 16.50
No. 1 railroad and machinery cast scrap	15.00 to 15.50
Old steel axles	19.00 to 19.50
Old iron axles	22.75 to 23.25
Old car wheels	16.00 to 16.50
Railroad malleable	15.50 to 16.00
Boiler plate	13.00 to 13.50
Locomotive grate bars	12.00 to 12.50
Pipe	12.50 to 13.00
Wrought iron and soft steel turnings	8.50 to 9.00
Clean cast borings	7.50 to 8.00
No. 1 busheling scrap	13.50 to 14.00

New York

NEW YORK, May 4, 1910.

Pig Iron.—Business is not entirely at a standstill, contracts amounting to 15,000 to 20,000 tons having been closed in local pig iron offices in the past week. Several foundries on Long Island and at Hudson River points have been in the market, and pipe works in eastern Pennsylvania and on the Delaware River have been buyers. Virginia iron has been offered at lower prices, and $14 for No. 2 X is reported as the basis of actual sales. This would mean $17 on board vessel in the New York district. Virginia iron has been more actively pressed for sale in New England at $18 at points which Buffalo iron on a $16, Buffalo, basis for No. 2 can reach at a delivered price of $18.40 to $18.50. The strike of molders and coremakers in a few local foundries has not been considered a factor in the pig iron market, but there is a possibility of its spreading, and a similar issue is about to be raised in Newark foundries. We quote Northern iron at tidewater as follows: No. 1, $17.50 to $17.75; No. 2 X, $17.25 to $17.50; No. 2 plain, $17 to $17.25. Southern iron is quoted at $17.25 to $17.50 for No. 1 and $16.75 to $17 for No. 2.

Steel Rails.—The Tennessee Company has booked 4300 tons additional for the Harriman lines and about 1400 tons for Southern trolley lines. Sales of rails by Pittsburgh and Chicago district mills have been only about 2000 tons. The Nevada Copper Belt Railroad Company has awarded 2400 tons to the Colorado Fuel & Iron Company.

Finished Iron and Steel.—The situation in the structural trade seems to be improving materially. The plate trade is also slightly stronger, but hampered considerably by consumers' labor troubles. Steel bars are still slow in deliveries, but this has not prevented slackness in the bar iron trade. Several Eastern bar iron mills have been obliged to shut down for lack of business; this has made it easier for the others to maintain present prices. Last week over 25,000 tons of structural material was bid on for New York City alone, which is the best week's record for some time. These were mainly small quantities, only one or two being over 1000 tons. The largest of these was for the addition to the Stern store, 3400 tons. The steel work was bid on separately and bids went in last Friday. Bids on the general contract have been received for another store addition, 600 tons for one of the McCreary stores. Bids are also in on an addition to the McGraw building on Thirty-ninth street, for which about 900 tons will be required. Bids closed May 4 for a 19 story office building at 218-220 Fifth avenue will not require over 2000 tons. The Belmont Iron Works took 550 tons for a school building in Brooklyn. The Eastern Bridge & Structural Company was awarded 1250 tons for a weave mill for the Lancaster Mills at Clinton, Mass. Few of the inquiries of the railroads for bridge material, which are in the market and make a considerable total, have been closed. The American Bridge Company got between 1100 and 1200 from the Michigan Central and about 800 tons from the Lake Shore. This leaves in the neighborhood of 2000 tons still to be placed by the latter road. The Phoenix Bridge Company has taken about 200 tons in bridges for the Central Railroad of New Jersey. The New York, New Haven & Hartford Railroad has given out some more bridge contracts. For 10 small bridges for Boston, an aggregate of 1600 tons has been placed with the

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Boston Bridge Company, and 12 or 14 more of about the same average size have been contracted for. The Essex Building in Newark, N. J., has been taken by the Hay Foundry & Iron Works. The Lozier Motor Company is in the market for a shop building in Detroit to require about 400 tons. The Lackawanna Bridge Company took the car shop for the New York Central in Buffalo of 600 tons. Contracts closed in New York City include the following: Levering & Garrigues have two loft buildings, one on West Seventeenth street of 650 tons and one on Fourth avenue of 400 tons. An apartment house at Ninety-ninth street and Broadway, 800 tons, has gone to Milliken Brothers, and the Gordon Brothers Iron Works has 500 tons for another apartment house uptown. The contracts are all but signed for the brewery for Jacob Ruppert at Ninety-third street, to require about 2000 tons. About 3000 tons has been placed or is in the market for buildings on the Pacific Coast. May 5 the bids will be opened on the contracts for the requirements for the Panama Canal work for the year ending June, 1911, and the results are being awaited with much interest. A very large tonnage in plates is to be awarded. No changes in prices are to be reported. Plain structural material and plates are quoted at 1.66c. to 1.71c.; steel bars at 1.61c. to 1.66c., and bar iron at 1.50c. to 1.60c., all New York.

Cast Iron Pipe.—The Department of Water Supply, Gas & Electricity of the city of New York is readvertising for bids for 9000 tons of water pipe for the Brooklyn high pressure service, to be opened May 11. The pipe is principally 20 in., but includes other sizes down to 8 in. At the letting advertised for April 28 for 3800 tons of 36-in. flexible joint pipe for the Staten Island supply no bids were received. The specifications prescribed were exceedingly severe, and it is understood that modificafions have been insisted upon even by the few manufacturers having the equipment and other facilities for furnishing pipe of this character. It is stated that another date will be announced shortly for the submission of new proposals. General business is coming out disappointingly slowly. Prices, nevertheless, are holding quite well and quotations are continued at $25.50 to $26 per net ton, tidewater, for carload lots of 6-in.

Old Material.—Cast scrap is now very quiet, and almost nothing is being done in rolling mill stock, as the bar iron mills supplied from this section of the country are either shut down for lack of orders or are running at only part capacity. Borings and turnings are completely neglected. While the general market is in an apathetic condition, some buying of steel scrap is being done by dealers having contracts yet to fill, and a little movement is also reported in wrought pipe. Bids were opened yesterday on 1000 tons of Panama Canal scrap now lying in the Pennsylvania Railroad yards at Greenville, N. J. The successful bidder was a New Jersey dealer, who named $11.36 per ton, which was much above the next highest. The following quotations, which are largely nominal, are per gross ton, New York and vicinity:

Rerolling rails	$13.00 to $13.50
Old girder and T rails for melting	12.50 to 13.00
Heavy melting steel scrap	12.50 to 13.00
Relaying rails	21.00 to 22.00
Standard hammered iron car axles	23.00 to 24.00
Old steel car axles	18.50 to 19.00
No. 1 railroad wrought	15.00 to 15.25
Wrought iron track scrap	13.50 to 14.00
No. 1 yard wrought, long	13.50 to 14.00
No. 1 yard wrought, short	13.00 to 13.50
Light iron	7.50 to 8.00
Cast borings	7.00 to 7.50
Wrought turnings	8.50 to 9.00
Wrought pipe	12.50 to 13.00
Old car wheels	13.50 to 14.00
No. 1 heavy cast, broken up	13.00 to 13.50
Stove plate	10.00 to 10.50
Locomotive grate bars	10.00 to 10.50
Malleable cast	12.50 to 13.00

A New Steel Plant at Wheeling.—The Whitaker-Glessner Company, operating the Crescent Iron Works (Whitaker Department), at Wheeling, W. Va., and sheet mills at Martins Ferry, Ohio, and owner of the Wheeling Corrugating Company, has declared a 50 per cent. stock dividend out of the earnings of the company and has also increased its capital from $3,000,000 to $5,000,000. The company announces that it intends to build an open hearth steel plant and bar mill for the production of sheet and tin bars, but as yet no bids have been requested. It is not the intention of the company to make steel for the open market, but for consumption in its own sheet and tin plate mills at Wheeling and Martins Ferry. A sufficient amount of the new stock will be sold to provide the funds required.

Metal Market

NEW YORK, May 4, 1910.

THE WEEK'S PRICES

Cents Per Pound.

	Copper.			Lead.		Spelter.	
April.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
28	13.25	12.75	32.90	4.40	4.25	5.55	5.40
29	13.25	12.75	32.90	4.40	4.25	5.50	5.35
30	13.25	12.75	....	4.40	4.25	5.40	5.20
May.							
2	13.12½	12.50	32.05	4.40	4.25	5.20	5.05
3	13.00	12.40	32.90	4.40	4.25	5.15	5.00
4	13.00	12.40	32.70	4.40	4.25	5.15	5.00

Discouraging conditions exist in the metal trades. Copper is being freely offered at lower prices than a week ago. Regardless of the fact that the monthly statistics for April showed large deliveries, the tin market has weakened. Lead is very dull. Spelter has dropped 45 points within a week.

Copper.—Large lots of electrolytic are being offered at materially lower prices than were made during the buying movement of three weeks ago, and lake has also weakened perceptibly. This may be due to the fact that the exports of copper for April amounted to only 13,062 tons, which is the smallest month's shipments since December, 1907. There are no signs as yet of shipments improving, as for the first three days of this month only 70 tons went abroad. It is known that there are very heavy stocks on hand, and as most of the large consumers have bought enough to cover their needs for two months at least, it looks as though further concessions may be made. It is estimated that domestic stocks increased at least 25,000,000 lb. during April. Electrolytic can be had in this market at 12.45c., and lake is down to 13c. Casting copper is firmer than the other grades and it is quoted at 12.50c. As a rule, casting copper can be had at a lower price than electrolytic. The London market is weak. L. Vogelstein & Co. give the following figures of German consumption of foreign copper for the months of January, February and March, 1910: Exports, 44,663 tons; imports, 1705 tons; consumption, 42,958 tons, as compared with consumption during the same period in 1909 of 34,029 tons. Of this quantity 40,022 tons were imported from the United States. Spot copper was sold in London to-day for £55 7s. 6d., and futures brought £56 7s. 6d. The sales were 1000 tons of spot and 1600 tons of futures.

Pig Tin.—While the statistics for April show that the exports were very large, the report has created no optimistic feeling in the trade, and if anything the market has weakened. There was a poor demand for tin during the month, and while the deliveries were large the stocks show a substantial increase to offset them. It is known that the heavy shipments from New York and Brooklyn warehouses were made to cover old contracts and nearly all the business done in futures during the last few weeks has been delivered. The United States Steel Corporation shipped large quantities of its stocks and it is said that some of this was resold to other consumers. It is stated on good authority that hardly more than 2000 tons of tin is now ordered for future delivery in this market and the trade generally agrees that deliveries into consumption for May will be decidedly small. Consumers abroad are indifferent to the situation and reports from there show that nearly all the business that is being done is among dealers. Reports compiled by C. Mayer, secretary of the New York Metal Exchange, show that better business was done during April than the trade was generally aware of. This was largely in the way of deliveries into consumption of tin that was bought some time before, however. The deliveries were large, amounting to 4100 tons. The total for four months shows an increase of 2200 tons, compared with the same time last year. Shipments from the Straits for April were 878 tons smaller than for the same month of last year. For the four months of this year the decrease in shipments amounts to 1224 tons, compared with the same time last year. Australia shipped 255 tons less in April, compared with the same month of last year. The total visible supply April 30 was 893 tons below that of April 30, 1909. Tin was sold in New York this afternoon for 32.70c. The London market closed with spot selling at £148 12s. 6d., and futures £150. The sales amounted to 200 tons of spot and 300 tons of futures.

Tin Plate.—Stocks of tin plate are better and consumers who have been paying premiums are making better terms for themselves. The buying is only fair. In New York the price is $3.84 for 100 lb. coke plate and the price for tin plates in Swansea is unchanged at 13s. 1½d.

Lead.—Conditions in the lead market are unchanged, and it is only because the leading interest is firmly maintaining its price at 10c. to 12½c. over the outside market that the price keeps up. It is a question as to whether outside sellers will be able to carry out the policy framed up by the principal producer of holding firm for the spring buying, and they are hoping that the production will be

The Iron and Metal Markets

curtailed with a view to bringing consumers to time. Bonded stocks of lead in New York are perhaps the largest on record, amounting to fully 26,000 tons. The market is weak; spot lead in New York is 4.40c. and in St. Louis 4.25c.

Spelter.—There has been a sharp break in the spelter market and it seems to be very near to demoralization. Buyers have a lack of confidence in the situation and some sellers seem to be anxious to dispose of their stocks. In fact, they have been scrambling for such few orders as have been in sight during the last week, and have been reducing their price five points at a jump. It is apparent that the low price of copper and the weakness in the tin market are having an effect on the spelter trade. The zinc ore market is also ragged. The price of spelter in New York is now down to 5.15c. A strange thing about the New York situation is the fact that there are no stocks on hand, but it would not take long to get the metal here, and the price quoted above is for May, June and July shipment. In St. Louis there are reports of offerings at 4.97½c. The prices quoted to-day are lower than the average price of any year in the last seven, with the exception of 1907 and 1908.

Antimony.—The antimony market is stagnant and prices have weakened somewhat. Cookson's is now quoted at 8.37½c. and Hallett's at 8.12½c. Hungarian grades are offered at 7.30c. The reduction of 20 points in the latter grades caused the decline in the general market, but the demand is so slight that these prices may be considered more or less nominal.

Old Metals.—The market is weak. Dealers' selling prices are quoted as follows:

	Cents.
Copper, heavy cut and crucible	12.25 to 12.50
Copper, heavy and wire	12.00 to 12.25
Copper, light and bottoms	11.00 to 11.25
Brass, heavy	8.50 to 8.75
Brass, light	7.00 to 7.25
Heavy machine composition	11.50 to 11.75
Clean brass turnings	7.75 to 8.25
Composition turnings	9.75 to 10.00
Lead, heavy	4.05 to 4.20
Lead, tea	3.80 to 3.95
Zinc, scrap	4.25 to 4.50

The German Iron Market

BERLIN, April 21, 1910.—At the fortnightly trading on the Düsseldorf Exchange last week the quotations for all qualities of plates were about 2.50 marks higher, including the thinner qualities, although the price advance of the trade combination, as mentioned in last week's letter, covered only heavy plates. The plate market seems just now to be the most active section of the trade, particularly in the heavier kinds. Orders have been coming in briskly, and the mills are all running to their capacity. Ship plates are selling more freely at the higher prices, and in boiler plates—a section of the trade that had been very slow to show any improvement—business has latterly been considerably livelier. Plates of medium thickness are in great demand, but the thinner sizes have grown quieter since export business has become more difficult to secure.

The Steel Syndicate held a meeting to-day and voted to begin taking orders in semi-finished steel for the September quarter at unchanged prices. There had been some talk several weeks ago to the effect that a further advance in prices would be adopted, but the managers were evidently influenced by the unsatisfactory reports from the American market to leave prices as they are. The report given out to the press by the managers says that the home trade in semi-manufactured products during the past two months was excellent, both as to the orders taken and the specifications sent in; and in the export business, although a quieter tone has prevailed, the calls for goods on order have been satisfactory. This is attributed chiefly to the fact that the trade in England improved generally during the March quarter. The Syndicate again dilates upon the inadequate home orders for heavy rails, but with the difference that its complaints this time are of a more pessimistic tone than ever, inasmuch as the Prussian railroads are planning to take even smaller amounts of rails than the sharply reduced quantities taken during the year just elapsed. This also applies to steel cross ties and other track material. Good foreign orders for heavy rails continue to come in; the German colonies have been sending in pretty large orders. The trade in rails for mines remains very active, and the mills are often compelled to exact rather long terms of delivery. Large orders in grooved rails from home and foreign sources have recently been taken at better prices. The improvement in business in structural shapes has come to a standstill owing to a huge lockout in the building trade affecting about 150,000 men. Nobody wants to order now in view of the possibility that the lockout, which covers nearly all parts of the empire, may drag on for months. The foreign business in this branch, however, remains good, with prices well maintained and specifications coming in satisfactorily.

The market reports of the newspapers indicate that the effects of the lockout have also begun to be felt in the bar trade. The lockout began a week ago, but it had been expected for some time previously, and even by way of anticipation the bar trade began to feel its effects. Wire rods continue in a strong position. The works are well employed on home orders, and they have foreign orders running beyond the June quarter. Business in wire nails has grown quieter in view of the lockout already referred to, and the foreign trade in wire and wire nails is also quieter.

In pig iron not much new business is coming in, but consumers are calling for goods on order at a regular satisfactory pace. Some orders for iron, but not for very large quantities, have been sent in from England. Scrap has latterly weakened further upon increased offerings; nevertheless, the demand is pretty large. The situation of the ore market is quite satisfactory. In the high grade ores of the Siegen region higher prices are expected soon, and foreign ores, both Swedish and Spanish, are firmly held.

The exports of iron and steel in March were heavy, amounting to 409,865 metric tons, against 349,304 tons in March, 1909. The net exports over imports amounted to 369,500 tons, which was an unusually big excess.

Iron and Industrial Stocks

NEW YORK, May 4, 1910.

Heavy liquidation set in last Thursday, caused by the calling of loans by banks, coupled with an advance in call money to 7 per cent., which is the highest rate in a long time. The liquidation was urgent. Some recovery occurred on following days, but renewed weakness was shown on Monday, when still lower prices were realized on numerous active stocks. Prices were again a little better on Tuesday. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com..	9⅞- 10	Railway Spr., com.	37½- 38
Allis-Chalm., pref..	32 - 36½	Railway Spr., pref.	100¼-103
Beth. Steel, com ..	28 - 29¼	Republic, com.....	32 - 33½
Beth. Steel, pref...	55 - 59	Republic, pref.....	96¼- 98¼
Can, com.....	8¾- 9⅞	Sloss, com.....	71 - 74
Can, pref.....	71 - 73	Sloss, pref.....	120
Car & Fdry, com..	55½- 59⅜	Pipe, com.....	20½- 21½
Car & Fdry, pref..	115 -116	Pipe, pref.....	69½- 70¼
Steel Foundries....	56⅞- 59⅛	U. S. Steel, com...	78½- 82¼
Colorado Fuel.....	35⅝- 37⅜	U. S. Steel, pref...	115¾-119½
General Electric...	145¾-148½	Westinghouse Elec..	61 - 62½
Gr. N. ore cert....	61 - 64	Am. Ship, com....	75½- 78
Int. Harv., com...	89¾- 92½	Am. Ship, pref....	110 -110¼
Int. Harv., pref...	121 -122	Chi. Pneu. Tool....	39⅛- 40
Int. Pump, com...	42 - 42½	Cambria Steel.....	45 - 47¼
Int. Pump, pref...	83 - 83½	Lake Sup. Corp....	21⅜- 22½
Locomotive, com...	45⅝- 48¾	Pa. Steel, pref....	111¼-113
Nat. En. & St.,com.	20¼- 20⅞	Warwick	10½- 11¼
Pressed St., com..	36 - 38¾	Crucible St., com..	12⅜- 13⅜
Pressed St., pref..	99 -100¼	Crucible St., pref..	82¾- 85¼

Last transactions up to 1 p.m. to-day are reported at the following prices: United States Steel common 81¼, preferred 118¾, bonds 103⅞; Car & Foundry common 56⅞, preferred 115; Locomotive common 47⅝, preferred 110; Colorado Fuel 36½; Pressed Steel common 37; Railway Spring common 38; Republic common 32⅞, preferred 96⅝; Sloss-Sheffield common 72⅛; Cast Iron Pipe common 21½, preferred 70¼; Can common 9⅞, preferred 72.

Dividends.—The American Steel Foundries Company has declared a quarterly dividend of 1¼ per cent. This is the first dividend declared since the reorganization of the company. It is payable May 14.

The Cambria Steel Company has declared the regular quarterly dividend of 1¼ per cent., payable May 14.

The St. Paul Foundry Company, St. Paul, Minn., has closed contracts to furnish all the structural steel in the group of buildings for the new Minnesota State Prison work at Stillwater. This contract amounts to approximately 1600 tons. The company has also secured the contract for all the structural iron required in the new foundry buildings and storehouse to be erected for the Northern Pacific Railway Company at Brainerd. The amount of this contract is about 370 tons.

The American Roll & Foundry Company, Canton, Ohio, has built an addition to its foundry, 60 x 120 ft.; has added a 25-ton air furnace, a 35-ton Morgan crane, a 10-ton yard crane, and has ordered roll lathes and drill presses for its machine shop. The power plant will be doubled in capacity. These improvements will increase its roll output 70 per cent.

The Machinery Markets

Notwithstanding the fact that the railroads are slow in coming into the market and that reports from many parts of the country show that the machinery business is less active, it is apparent that there is a good undercurrent of buying, as manufacturers of machinery in some lines have found it necessary to advance prices. Quotations on heavy outdoor equipment, such as contractors use, including dredges, hoisting apparatus and like apparatus, in the manufacture of which rough machine work enters, have been advanced slightly, and at an important meeting of upright drill builders, held recently, it developed that prices have been advanced by practically every one in the industry. The increase is in the form of a readjustment and the builders of small radial drills have advanced their prices about 5 per cent. The trade is looking forward to the coming joint convention of the National Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association which begins at Atlantic City, N. J., May 11, as it is thought that at that time important trade agreements may be discussed and some reasons for recent advances made by manufacturers will be disclosed. The forthcoming meeting of the National Machine Tool Builders' Association at Rochester on May 24 will also be interesting to the trade. The association has been strengthened by the addition of a record breaking number of new members, including many prominent houses. Both of these sessions may have an effect on trade conditions. In the East a good business has been done in mining machinery, and the trade is looking forward to good business shortly from several newly formed companies, including the United States Motor Company, which will be a power in the automobile trade. In Chicago the railroads are still out of the market, but crop reports show that there will be a good freight tonnage later on, and this should mean that the railroads will have to improve their repair facilities. Orders have fallen off in Milwaukee, but there are plenty of inquiries, and the automobile business is attracting attention there. This is also the case with Detroit. In Cleveland the railroads are fairly active and they are placing single orders for heavy forging equipment and automatics. In the Southwest business is reported to be more quiet, but prospective municipal improvements in the way of new water and electric light plants promises a good future business. The Pacific Coast reports business as being only fair and there has been a general falling off in the South. In the latter territory there are complaints of price cutting. The opening up of navigation on the Great Lakes is bringing out orders for repair equipment from the shipbuilding interests, and the conveying machinery people are doing a good trade. In Philadelphia only a single tool business is being done, but orders previously booked are helping out there.

New York

NEW YORK, May 4, 1910.

Machinery dealers who handle a general line of equipment are doing a good business and a number of houses in reviewing their books for April found that they did a larger business in that month than in any month of the year. The first part of the month was not so good except in inquiries, but orders came in during the last two weeks of the month in heavy volume. No lists calling for any large amount of equipment have come out during the week, but it is apparent that the automobile manufacturers in and around Connecticut will be buying shortly, as they are making inquiries. The Columbia Motor Car Company, of Hartford, Conn., and the Locomobile Company, Bridgeport, Conn., are inquiring for some machinery. The United States Motor Company, which has established offices at 505 Fifth avenue, New York, should be watched closely, as they will undoubtedly buy heavily within the next few months. It is stated that the United States Light & Heating Company, 30 Church street, New York, which is building a large plant at Niagara Falls, will not buy for several weeks, as it does not expect to have its plant in operation until September at the earliest. With the exception of the New York Central Railroad the railroads are still holding off.

There has been an unusually good demand for mining equipment in this market of late and during the last eight weeks it is estimated that orders for fully $300,000 worth of that class of material have been placed. Notable among these is the contract taken by the Power & Mining Company from the Ray Consolidated Copper Company for machinery which will call for an expenditure of about $150,000. A large amount of mining equipment has been sold for delivery in Mexico and in this country the copper producers generally have been heavy buyers. Some good business has been done in the Metropolitan district with the steel makers. Manufacturers of gas producers have been taking some good sized orders and there have been some large sales of charging equipment and similar machinery for delivery to the steel companies.

Sealed proposals will be received until May 10 at the office of the engineer, Third Lighthouse District, Tompkinsville, N. Y., for furnishing one universal milling machine and one 24 in. upright sliding head drill, motor driven. Particulars may be obtained by addressing the engineer at the station named.

The Constructing Quartermaster at Fort Du Pont, Delaware City, Del., will receive proposals until May 23 for furnishing and installing two 75 hp. water tube boilers, one feed pump, one feed water heater, new steam and exhaust mains and also for making certain removals and changes in the pump house at Fort Du Pont. Specifications may also be seen in the office of the Chief Quartermaster, Department of the East, Governors Island, N. Y.

F. H. Ogden, consulting and designing engineer, Newark, N. J., has completed plans for a large foundry to be built for the Universal Caster & Foundry Company at 574-600 Ferry street, Newark. The building will contain from 180,000 to 190,000 sq. ft. of floor space and will be erected on a plot 400 x 600 ft., recently acquired by the company. Construction work will be begun about June 1, and it is expected the structure will be completed by next February. The entire cost, with the equipment which is to be purchased, will be about $200,000, and there will be 12 buildings in all.

The recently organized Concrete Conveyor Company, it is now announced, was formed as a holding company for patents taken out by W. H. Larken on apparatus for conveying concrete from a mixer into place through pipes by means of pneumatic pressure. The company proposes to license manufacturers in this and other countries to make and market the apparatus and it has just closed a contract with the Ransome Concrete Machinery Company, of Dunellen, N. J., awarding that company entire manufacturing rights in the United States. This company, it is understood, will add to its manufacturing facilities in order to construct the new line of equipment.

The Pierce-Arrow Company's Newark, N. J., branch, which is under the management of the Ellis Motor Car Company, of that city, is having plans drawn for an automobile garage to be built on Washington street, between New and Linden streets, at an estimated cost of $50,000. The structure will be 50 x 100 ft. and five stories. The equipment will include an elevator capable of lifting 8000 lb. for freight carrying and an automatic electric passenger elevator. The building will contain a machine shop, paint room and varnish room in the upper stories, and the first floor will be devoted to a salesroom.

The Newark Wagon Company, Newark, N. Y., is being

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incorporated under the laws of New York, with a capital of $100,000, to take over the business of the Wright & Osborn Company, manufacturer of the Miller spring truck wagon, of Mexico, N. Y. S. F. Sherman of Newark is at the head of the project, and the company intends to manufacture auto trucks, spring trucks and contractors' wagons. A plant is to be built in Newark which will consist of a one and two story building, 128 x 160 ft., with additional dry kilns, lumber sheds and other outbuildings. The officers of the new company are S. F. Sherman, president; W. H. Osborn, first vice-president, and F. B. Moody, secretary. Fred E. Wright will be superintendent of the plant and will have full charge of the manufacturing.

Drop presses and other equipment used in the manufacture of jewelry will be installed in an addition which is to be made to the plant of Shipman Brothers & Co., Newark, N. J. The addition will be about 30 x 100 ft., and it is expected to be ready for occupancy by October.

E. Greenfield's Son & Co., 107 Lorimer street, Brooklyn, confectionery manufacturers, have awarded a contract for a six-story and basement reinforced concrete factory building, 66 x 200 ft., to the Turner Construction Company, New York. A two-story garage, 20 x 90 ft., will be added later. Henry Otis Chapman, 334 Fifth avenue, New York, is the architect who drew the plans.

The National Carbon Company, Cleveland, Ohio, has completed plans for the building of a large plant at Niagara Falls, N. Y., to be devoted exclusively to the manufacture of carbon electrodes and other carbon commodities, which are used in large quantities in the Niagara Falls District for electric furnace work and similar lines. The company has purchased a site of 13 acres at the northern end of the city, near the plant of the United States Light & Heating Company, work upon which has just been commenced, as mentioned in our last issue. The new plant will be practically a duplicate of the one built by the company at Clarksburg, W. Va., five years ago, the main building being a furnace room about 300 ft. long. The most modern and improved equipment will be installed. The company, which is capitalized at $10,000,000, now operates plants at Cleveland, Ftemont and Fostoria, Ohio, in addition to the plant at Clarksburg.

The Niagara Electro-Chemical Company, Niagara Falls, N. Y., has completed an addition to its plant which was begun last October, and is not now constructing an addition, as was stated in *The Iron Age* of April 28.

The Republic Metalware Company, Buffalo, N. Y., is adding a two-story brick storage and shipping department building to its plant at Republic street and the Erie Railroad.

The Lautz Company, Buffalo, N. Y., manufacturer of marble and onyx work, is arranging to establish a branch plant at Chippewa, Ont., near Niagara Falls.

The International Tool Company of Canada will build a plant on the Welland Canal at Dunville, Ont.

The Carborundum Company, Niagara Falls, N. Y., manufacturer of abrasive wheels and materials, is arranging for a further enlargement and extension of its plant at Buffalo and Eighteenth streets during the summer.

The Latta Tack Mfg. Company, recently organized, has broken ground for a factory at Ellicottville, N. Y., to be equipped and operated for the manufacture of tacks, rivets, staples and hardware specialties. Most of the machinery has been ordered. Frank Latta is president and manager, 180 Forest avenue, Buffalo, N. Y.

The Thompson-Moeller Ignition System Company has been incorporated at Buffalo, N. Y., to manufacture ignition apparatus for gas engines, &c., and a factory is being arranged for at Buffalo. Carl R. Moeller is manager, 95 Main street, Buffalo.

The Chenango Auto Top Company has been incorporated at Buffalo, N. Y., with a capital of $2000, to manufacture automobile tops and fixtures, and will equip a factory at 30 Chenango street. Edward Robinson is manager.

A number of electric motors will be installed shortly by the Jamestown Shale Paving Brick Company, Jamestown, N. Y.

The Tata Iron & Steel Company, Calcutta, India, has ordered from Chalmers & Williams, Inc., Chicago, Ill., in competition with other American manufacturers, two gyratory breakers, with 60-in. opening, for crushing ore and flux.

The East Jersey Pipe Company, Paterson, N. J., will install in the near future an electric generating unit of 125 kw. for direct current, belted to a Corliss engine.

From Perry, N. Y., it is reported that the purchase of a new pump for the water works system is under consideration by the authorities.

Two steel frame rotary kilns, each 125 ft. long, will be installed during the coming summer in the plant of the Marengo Portland Cement Company, Caledonia, N. Y.

The Lily White Cement Company is about to erect a 500-bbl. mill at Bethlehem, Pa. Contract for the group of steel frame buildings has been awarded and machinery will be provided shortly.

The Summerill Tubing Company, Norristown, Pa., is reported to be in the market for an air compressor of 150 cu. ft. capacity at 20 lb. pressure. Inquiries, however, should be addressed to the company's engineer, H. J. Webster, Harrison Building, Philadelphia, Pa.

The United Clay Companies, with factories at Akron and Tallmadge, Ohio, will construct a large warehouse in Jersey City, N. J.

Business Changes

The Funk Mfg. Company, 3947 Fourteenth street, Hoboken, N. J., has been organized to take over the plant and business of the Funk Engineering Company, and will continue the manufacture of automobile forgings and finished parts, as well as doing a general machine building and engineering work. The officers of the new company are Richard W. Funk, president; Fred C. Lang, vice-president, and Archibald S. Alexander, secretary and treasurer.

The A. & F. Brown Company, founder, machinist and millwright, has moved its New York store from 25 Church street to 172 Fulton street, where it carries a full stock of shafting, pulleys and hangers, together with related equipment.

Chicago

CHICAGO, ILL., May 3, 1910.

While there is more or less complaint that trade is not up to expectations, many of the Chicago houses report a very satisfactory business in machine tools. The inquiry is quite general from all lines of business except the railroads. Weather conditions affect the transient trade to an extent that would be scarcely expected in the machine tool business, and crop conditions during the next two or three months will prove an important factor. Agricultural conditions have been unusually favorable this spring, and if this continues the railroads will have to face the problem of moving large crops next fall. It would seem as though such a prospect would compel them to become urgent buyers of shop equipment. The railroad trade in the West has been a great disappointment to the machinery houses during the past winter. Machine tool men who have personally gone through the shops of leading railroads have been surprised at the run-down condition of their tools and shop equipment. It seems almost incredible, some say, that the responsible officials of the railroads would allow this condition to go on after the trouble they had the past winter in taking care of their traffic. During a considerable part of the winter Western railroads, which have always taken pride in their equipment and facilities, were simply unable to accept business offered them by shippers. There is usually a pronounced drop in the volume of railroad traffic in the spring, so that there is no complaint now of car shortage. There are still many complaints, however, of delays in transit of machine tools, which pay high freight rates and usually make good time. If the railroads are so badly off that they cannot give good service at this time, their dull season, conditions are likely to become very serious when the crop movement begins next fall unless liberal expenditures are made to rehabilitate their equipment. The railroad trade, however, has been running along in the form of orders for one or two tools at a time and very little has been done on the lists that have come out during the past six months.

The Northern Pacific Railway Company is erecting a new foundry at Brainerd, Minn., to have a daily capacity of 50 tons of gray iron castings and six tons of brass castings. The main foundry building is 120 x 320 ft.; the pattern shop is one story 50 x 80 ft.; the pattern storage building will be four stories. 50 x 80 ft. The boiler house is 35 x 50 ft. with three 150 hp. return tubular boilers. Facilities are also provided for the storage of sand, scrap and coke. The main bay of the foundry will have a 10-ton high speed traveling crane, and the side bay a two-ton traveling crane. The main foundry will also have two five-ton jib cranes, and the brass foundry will have an I-beam crane of one ton capacity for serving ladles and four I-beam hoists for distributing ladles. The pattern storage house and charging floor will have three-ton electric elevators.

The Morrison Specialty Company, Morrison, Ill., has a new factory under construction, 60 x 60 ft., but will not require additional equipment at present. The company's business is the manufacture of mouse and fly traps.

A new pumping engine may be bought this season for municipal water service at Canton, Ill. Some improvements are also likely to be made before long in the plant of the Canton Gas & Electric Company.

The Cairo Railway & Light System, Cairo, Ill., is reported to have decided upon increasing the capacity of its electric generating plant.

The Artesian Stone & Lime Works Company, Chicago, is making extensive improvements at its several plants, in-

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cluding the installation of additional machinery. More will probably be required later on.

The National Mfg. Company, Sterling, Ill., is proceeding with the erection of a new three-story addition to its hardware factory.

A new pumping station, with motor-driven machinery, is to be erected this year at Rockford, Ill.

Plans for the construction of a pumping plant and water works system are under consideration by the municipal authorities at Mitchell, Ind.

From Wabash, Ind., it is reported that the vehicle factory of the Wabash Mfg. Company is being dismantled, and that the machinery will be reinstalled at Terre Haute, Ind., where substantial inducements for the location of this industry have been offered.

The municipal electric light plant at Dana, Ind., which is now equipped with Atlas boiler and engine of 125 hp. and a Westinghouse generator, will have its capacity more than doubled by the purchase of additional machinery.

The Sherwin-Williams Company, Cleveland, Ohio, will install a line of alternating current motors in its factory at Kensington, Chicago.

The Illinois Bolt, Nut & Forging Company, Chicago, will remove in the near future from Thirty-fifth street and Ashland avenue to a new factory at Hammond, Ind., which is now under construction.

The Indiana Union Traction Company, Anderson, Ind., whose main generating station, located at that place, has a present capacity of 5000 kw., will probably install a steam turbine unit of 2000 to 3000 kw. in the late summer or fall. Westinghouse alternating current generators, driven by Rice & Sargent gravity gear Corliss engines are now in service.

A municipal power and pumping station, electrically operated, is to be built this summer at Brownstown, Ind. Bids on equipment will be called for shortly.

The Jackson Shovel & Tool Works, Montpelier, Ind., is erecting a new power house of brick and steel, in which will be installed four 80-hp. boilers and one 150-hp. Corliss engine. Several new machine tools have been added to the equipment.

The George Cutter Company, South Bend, Ind., is erecting a foundry, 145 x 242 ft., of steel and brick construction. The new building will be used in the manufacture of poles and brackets for tungsten street lighting. William H. Holland, formerly president of the Sibley Machine Tool Company, has acquired an interest in the George Cutter Company and will be identified with the management.

The Western Rubber Works, Goshen, Ind., will add to its plant a new building and machinery equipment, to cost $50,000.

The Oswald Motor Works, Goshen, Ind., will build an addition 60 x 165 ft.

The Indiana Railroad Commission has ordered the Wabash Railway Company to build a new bridge within six months over the Wabash River at Andrews, Ind. It will be 300 ft. long and will cost $50,000.

The Sullivan Electric Company, Sullivan, Ind., will spend $10,000 in repairing its plant, following the granting of a 25-year franchise from the city for lighting the streets.

The Dewitt Automobile factory at North Manchester, Ind., was destroyed by fire April 30, with $13,000 loss. It will be rebuilt. Part of the machinery was saved.

The Diamond Flint Glass Company will erect a druggists' bottle plant at Vincennes, Ind., to cost $50,000. The city gives the company a five-acre site and a bonus of $10,000.

The Peru Roller Bearing Company has been incorporated at Peru, Ind., with $50,000 capital stock, to manufacture roller bearings. The incorporators are S. H. Penfield, C. A. McCutcheon, E. D. Sherman, H. J. Hass and B. S. Dean.

The Wire Hardware Company, Chicago, has been established with a Massachusetts charter, to manufacture wire goods and has purchased a factory on Besley Court, Chicago, on the line of the Chicago & North Western Railroad. The new company is closely affiliated with the Wire Goods Company, Worcester, Mass., and will manufacture the same lines, the purpose being to serve the Western trade from a factory located in the territory. Perry M. Shepard, Chicago, is the president and general manager and Reginald Washburn, Worcester, the vice-president, while the directory consists of these officers and Stuart G. Shepard, Chicago, and Charles G. Washburn and Robert M. Washburn, Worcester. Reginald Washburn is manager of the Wire Goods Company. The Chicago factory will have a complete equipment of machinery and tools for producing wire goods.

The Van Doren Mfg. Company occupied its new plant at Chicago Heights May 2, where it will continue the manufacture of reinforced steel fishing rods and will also have additional facilities for case hardening and tempering. A brass foundry and drop forge shop will be added.

Philadelphia

PHILADELPHIA, PA., May 3, 1910.

Business in the local machinery market during the past month is generally reported by merchants and manufacturers to have been about equal to the average. There has been almost an entire absence of transactions covering large equipment purchases by any one concern, by far the greatest proportion of the business being made up of small propositions, principally single tool sales. The early portion of the month was the most active, the demand gradually falling off during the second half, while the closing week was in the majority of instances comparatively dull. An absence of any large programmes for tool and equipment purchases is noticeable at this time; one or more, which have been before the trade in this district for some time, are still under consideration, but develop very slowly. There has been some scattered buying by the railroads and industrial concerns, from which occasional inquiries still come out. Machine tool builders are in some instances beginning to feel the effect of less active buying, and while they still have order books pretty comfortably filled, deliveries are easier in some cases, and in others the long extended delivery dates are a trifle less pronounced. Milling machines and gear cutters of certain makes and sizes are still exceptions, builders being unable to furnish such tools for months ahead. The general hesitancy in the iron and steel markets is no doubt having its effect on the machinery trade, buyers in instances being disposed to withhold purchases, unless absolutely required, until a somewhat clearer insight into the future may be obtained.

Quiet conditions are still to be noted among builders of heavy engines, although a fair business in power equipment in the medium horsepowers is reported. Merchants dealing in gas and gasoline engines of the smaller types find business moderately active.

Purchases for export still continue light. Occasional orders for tools of a special character, frequently of fair proportions, are reported. Power transmission equipment is also in average demand, but that for tools of the standard types has been almost a negligible quantity.

The Wilcomb Machine Company, Norristown, Pa., manufacturer of textile machinery, has been steadily increasing its capacity by additions to its plant equipment. It is now in the market for eight automatic gear cutters and three multiple spindle drills.

The Pennsylvania Railroad placed orders last week for 171 steel passenger coaches for use on its lines East of Pittsburgh. The orders were divided as follows: American Car & Foundry Company, 98; Standard Steel Car Company, 45, and Pullman Car Company, 25.

It is stated that the Otto Gas Engine Works, Thirty-second and Walnut streets, has let contracts, one for a 30 x 50 ft. addition, another for a 50 x 92 ft. second and third story addition to its machine shop.

The contract for a 10-story brick and reinforced concrete factory building to be erected for the Lea Estate from plans by Watson & Huckel, architects, has been let to the Roydhouse-Arey Company. The building will be 73 x 100 ft.

Joseph M. Harper, of the Harper Mfg. Company, Chester, Pa., manufacturer of steam packing, &c., has acquired property 100 x 135 ft. on Sixth street, in that city, and will erect thereon a modern fireproof machine shop, to which the present plant will be moved. At a later date a garage and taxicab service will be maintained at the same location. Plans for the building are now being prepared, and details are not yet available.

The R. S. Newbold & Son Company, Norristown, Pa., is operating its plant at full capacity in all departments except the boiler shop and foundry, in which work is not quite up to normal. This company has been shipping heavily recently on several large contracts, one of which covers considerable equipment for a Nova Scotia plant.

The Acme Lubricator Company, Real Estate Trust Building, which has plants in Canada and England for the manufacture of the Philadelphia grease cup, which it controls, is having plans prepared for the erection of a two-story building 48 x 148 ft. at Sixty-first street and Girard avenue, adjoining its present plant. This will be used for general manufacturing purposes; a small machine shop equipment is to be installed, while later a brass foundry and further extensions to the plant will be made.

A charter, under New Jersey laws, has been granted the John M. Rogers Works Company, which succeeds the John M. Rogers Works, Gloucester, N. J., manufacturer of gauges and measuring machines, reamers, steam power plants for yachts and launches, &c. The capital of the company is $50,000. John M. Rogers, John M. Hamor and Francis C. Rogers are named as incorporators. The organization of the new concern has not yet been completed.

Preliminary plans have been completed for the first unit of the sewage disposal plant to be erected by the city of

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Philadelphia, and the site on which it is to be built has recently been inspected by city and State officials. The disposal of the city's sewage is looked upon as a greater proposition than even the recently completed water filtration system and will require years to complete. The first unit is to be built in the Holmesburg district and will be but a small one, costing about $150,000. It will have a daily capacity of 2,000,000 gal. of sewage. No definite date as to when proposals for the erection of the plant or when the work would be started has yet been announced.

The Newton Machine Tool Works, Inc., reports heavier shipments of tools during April than in any previous month in its history. New orders during the same period have been fully up to the average, covering cold saw cutting-off machines, particularly of the steel foundry types, planer type milling machines, rotary planing machines, &c. One order for six cold saw cutting-off machines of various sizes was received from the Japanese Government. All departments of the plant are actively engaged, and the policy of standardizing parts of some of its tools has greatly facilitated deliveries on certain classes of equipment built by this company. On its erecting floor are a number of heavy milling machines, cold saw cutting-off machines and other tools on which deliveries are steadily being made.

A charter was granted last week, under the Pennsylvania laws, to the Philadelphia & Suburban Railway Company, with a nominal capital of $1,000,000. The incorporators are S. S. Neff and A. L. Phillips of this city; C. W. Haines, Cheltenham, Pa.; John H. Hawkins, Media, Pa., and Coates Coleman, Swarthmore, Pa. The application for the charter was heard by the State Board of Commissioners several weeks ago. The company proposes to construct a subway about 2½ miles long under North Broad street, in this city; then extend by means of elevated roads to various points in the northern, northeastern and northwestern portions of the city. For this it will be necessary for the company to obtain a franchise from city councils, an application for which will be made at an early date. General plans for the proposed work have already been prepared, and it is stated that if favorable action is taken on the applications by councils work could be started three months after the date of franchise.

The A. H. Fox Gun Company, Philadelphia, Pa., expects to enlarge its present facilities, and, it is stated, is considering locating a new plant at Harrisburg or York, Pa.

The Herbeck-Demer Company, Honesdale, Pa., manufacturer of cut glassware, contemplates some additions to its plant.

New England

BOSTON, MASS., May 3, 1910.

The tide of business has turned again, this time toward better conditions. The dealers found the closing week of April the best of the month. Those of the machine tool builders who have felt a setback have had much the same experience as the dealers. Orders are being received in greater numbers, with considerably larger totals, and inquiries are more numerous and more promising. At the present rate of buying May will come closer to the usual high figures than had been supposed. The demand for skilled mechanics is becoming more serious than ever. Each of a number of machine tool builders would set 100 men to work to-morrow if they could be found. The labor bureaus of the National Metal Trades Association are helpless, because there literally are no men in the market. In general manufacturing the volume of business has decreased somewhat. In the wire trade, for example, while the mills and factories are running full, still there is a decrease of orders and less strain to produce. At the Worcester Works of the American Steel & Wire Company about 6400 men are at work, where 7000 could be used should trade conditions demand it. This is about the proportion as in other mills and factories.

The American Steel & Wire Company is carrying out a plan of replacement of the equipment of its machine shops at the Worcester Works, with the purpose of procuring an entirely modern repair and construction plant. Each month some old machines are replaced by new, a policy which will continue for some time to come until the rehabilitation is complete.

The Prentice Bros. Company, Worcester, Mass., has completed plans for the extension of the scope of its engine lathe department, so that hereafter a complete line will be produced, ranging from a light 9-in. to a heavy 36-in. machine. The company has found that there is now a large demand for the 9 and 11 in. engine lathes, corresponding in excellence of design and manufacture to the best precision tools in the larger sizes. Additional space to the amount of 17,000 sq. ft. has been taken in an adjacent modern factory building, and equipment has been purchased, which will be devoted to the production of the 9 and 11 in. sizes and also of the 12, 14 and 16 in. light lathes of standard design and of the five-step type. This department will also produce toolroom lathes in their various sizes in lots, with the idea of keeping them in stock for quick delivery. These machines have been redesigned throughout. John R. Back, formerly superintendent of the F. E. Reed Company, and more recently connected with the Worcester Industrial School, has become associated with the Prentice Bros. Company and will have immediate supervision over this department. The manufacture of the heavier lathes will be concentrated in the present shop building, which has exceptional facilities for the class of work, including two heavy electric traveling cranes. In this department will be built the double back geared and high speed types, together with the shaft turning and the turret lathes. The double back geared and high speed machines have been redesigned to secure certain refinements of operation and construction. To complete the line a 30 and a 36 in. heavy lathe have been added. This company is now employing about 400 men and with the additional space will increase the force to 500.

The Acme Shear Company, Bridgeport, Conn., manufacturer of solid steel cast shears and scissors, will erect a brick foundry building 50 x 80 ft., and a coke shed 26 x 50 ft.

The business of the Broughton Motor Works, Stonington, Conn., and that of the West Mystic Boat Company, West Mystic, Conn., have been consolidated under the latter corporation name, and will occupy the works formerly owned by the West Mystic Mfg. Company. The company builds stationary and marine gasoline engines and motor boats. The consolidation means a material increase in the business. The demand for motor boats this season is a large one.

Additions to general manufacturing plants in New England include the following: Concord Axle Shop, Concord, Mass., power house; J. B. Williams Company, Glastonbury, Conn., soap factory, 50 x 80 ft., four stories; Franklin Yarn Company, Franklin, N. H., addition 35 x 75 ft.; Birnie Paper Company, Springfield, Mass., building 50 x 105 ft., three stories and basement; New Haven Hospital, New Haven, Conn., electric power and heating plant.

The National Machine Tool Builders' Association is being greatly strengthened by a large increase in membership. Already some 20 houses hitherto unidentified with it have put in their applications, and it is confidently believed that the number of new members will be increased to 25 before the Rochester convention. The list includes some of the most prominent machine tool builders of the country. No such growth has been made in any recent year. The importance of this work by the present board of officers cannot be overestimated, for the stride brings the body close to the point of unanimity in association relationship throughout the industry. The influence already exerted in the trade has been enormous, as everyone connected with it is keenly aware, and large growth will extend the power for good still farther.

The Marlboro Machine Company, Marlboro, N. H., has purchased the entire business of C. & A. Hodgkins Company of that town and is equipping the shops with new machinery for the manufacture of the Humphrey water wheels, Humphrey automatic clutch and Humphrey fire pump, hydraulic rams and woodworking machinery, including planers and band saws. The buildings have been thoroughly repaired, including the iron foundry. D. J. Hart is the president, J. G. Fancy vice-president, R. M. Lawrence, treasurer, and W. M. Cheesman, secretary. All equipment required at present has been purchased.

The Quinsigamond Pressed Steel & Tool Company, 34 Whipple street, Worcester, Mass., manufacturer of pressed metal goods and machinists' tools, will increase its plant by an addition 27 x 38 ft. and will install new machinery. Inquiries are being made for presses. The proprietors are W. A. Dean and Henry Larava, who started the business a few months ago. The company's growth from a small beginning has been rapid and healthy and the additional space has become necessary.

The Anderson Coupling Company, Hartford, Conn., has been incorporated under Connecticut laws with authorized capital stock of $50,000, to begin business with $10,000. The company has but four stockholders, John Spencer Camp, George Walworth Hayden, Charles E. Pratt and Henry U. Storrs. The corporation is formed to take the place of the Anderson Coupling Company, Portland, Maine, which has gone out of existence, and to continue the manufacture of curb and corporation cocks, couplings and valves. These products will, as heretofore, be made by the Pratt & Cady Company, Hartford. As has been stated, the line of wrenches and pliers manufactured by the old Anderson Coupling Company will be made by the Anderson Wrench Company, Portland, Maine.

The Grip Coupling Company, manufacturer of couplings, announces that beginning May 1 it occupies its new factory on Morse avenue, Ware, Mass., having removed from Springfield, Mass.

A factory addition and power house, in which a Corliss

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engine, dynamo, pump, motors and other apparatus are to be installed, will be erected shortly by the Hideite Leather Company, Brockton, Mass.

The Southworth Machine Company, Portland, Maine, manufacturer of machinery for printers, bookbinders and kindred trades, will erect a shop building 100 x 150 ft., three stories, of reinforced concrete, on Preble street. It will be ready for occupancy about August 1. The company states that it will not be in the market for machinery at present.

The business of the Worcester Electric Mfg. Company, Worcester, Mass., manufacturer of knife switches and switchboards, has been incorporated with a Massachusetts charter, the capital stock being $30,000. John McGrady is president, James P. McGrady treasurer and manager, and Joseph McGrady clerk. The business was established in 1901.

Work will proceed at once on the new drop forge shop which the Billings & Spencer Company, Hartford, Conn., will erect in the suburban village of Dividend. The main building will be of steel and concrete, 80 x 150 ft., and there will be a large boiler house and an annealing building.

The new foundry of the Wason Mfg. Company, Springfield, Mass., car builder, will be 40 x 125 ft.

The new building, 60 x 70 ft., and four stories, which will be erected by the E. Ingraham Company, Bristol, Conn., manufacturer of clocks, will be used for storage purposes only.

The new Belknap Iron Foundry, Laconia, N. H., of which James McGloughlin is proprietor, will be 50 x 150 ft., of brick, with asbestos roof. The foundry will replace that destroyed by fire several months ago, and will be much larger and provided with the most modern equipment. Work on the building is well under way.

The local press of New London, Conn., prints a statement which is of interest to the trade as it affects the large works of the New London Marine Iron Works Company of that city. These works, according to this report, have been purchased by the General Power Company, a Maine corporation organized for the manufacture of steam engines and boilers and gas engines, with offices in New York, Boston, Chicago and San Francisco. The proposition is to take the manufacturing end of the business to New London, the company to expend $400,000 for buildings and equipment, providing that $100,000 of New London capital be invested in the enterprise. Subscriptions for the stock are now being taken. Upon them depend the future of the plant of the New London Marine Iron Works Company.

The City of South Norwalk Electric Works, South Norwalk, Conn., a municipal plant, will expend an appropriation of $30,000 in extending the power station, including the installation of a larger steam engine power. These works have been eminently successful, supplying light and power at low rates. The day service for power is at the rate of 5 cents per kilowatt hour for the first 200, 4 cents per kilowatt hour for the next 400, and 3 cents for over 600, with a 10 per cent. rebate for cash. A comparison with the general run of power plants shows these prices to be exceptionally low.

The Rumford Falls Power Company, Rumford Falls, Maine, has awarded the contract for an addition to its power station, in which an additional 5000 hp. will be developed.

The Hartford Electric Light Company, Hartford, Conn., has voted to increase its capital stock from $2,400,000 to $3,000,000. The proceeds of the sale of the new shares will be devoted to doubling the power station at Dutch Point.

Pittsburgh

PITTSBURGH, PA., May 3, 1910.

Continued irregularity characterizes the machinery market of this district at the present time. Some manufacturers have a steady run of business and see no prospect of any diminution of orders in the immediate future, while others report a decided decrease. Dealers are busy with negotiations for the sale of machinery previously quoted on, but state that inquiries have lessened in volume. As a whole, conditions for the past two weeks have been puzzling, as there is little, if any, apparent reason for the sudden reaction noted in many lines.

No one, however, is worried over the outlook; for present bookings are large and will carry local houses through any period of dullness which is at all likely to develop. An effort is also manifest in certain quarters to accumulate stocks of standard machines, or of parts which can be quickly assembled as needed, with a view to improving upon deliveries. Thus far this has not met with much success, owing to the pressure of current orders, but it may now be possible for manufacturers to get some stock ahead.

One line which not only holds firm, but even shows abnormal activity is that concerned with the transforming and transmission of electrical power. The tendency to generate energy as alternating current at high potential, and send it out over the wires at the same pressure to be stepped down at the point of consumption, has steadily been increasing, even for the power systems of industrial plants. Necessarily this involves the use of a great deal of apparatus which was unknown to the older low-voltage systems, and manufacturers of the Pittsburgh district, who have always been the most prominent in supplying such material, are having all they can do to meet the demand lately made on their productive facilities. It comes uniformly from all parts of the country, but is most pronounced just now in the Southern and Pacific States, where hydroelectric power developments of considerable size are in progress.

The Aluminum Company of America, Pittsburgh, publishes an interesting statement to the effect that 30,000 ft. of its bi-metallic tubing, consisting of a copper envelope with aluminum lining, have been in service in a surface condenser near this city, for ten months to nearly two years, without requiring a single renewal. The water is so contaminated with sulphates and sulphuric acid as to make the use of brass tubing impracticable, and copper tubes tinned both sides have not shown satisfactory results.

Among contracts recently taken by the Farris Bridge Company, Pittsburgh, is one for a steel structure across the Potomac River near Luke, Md. There have also been a number of good orders lately from industrial companies for bridges needed in the vicinity of isolated plants or development operations.

The Thacker Coal & Coke Company, Thacker, W. Va., whose plans for installing electrical machinery to be used in mining operations have previously been mentioned, will open up four new shafts this spring and summer. The company will need considerable equipment as operations are extended.

The Winters-Coleman Scale Company, Springfield, Ohio, has acquired the plant of a local harvester machine company and will add this to the present manufacturing facilities of its works. A specialty is made of the Sonander automatic scale, for which the Western demand has been particularly good during some months past.

Construction of water works is proposed at Cleveland, W. Va., and action in relation to the matter will be taken before fall.

It is reported from Beaver Falls, Pa., that the Acme-Keystone Mfg. Company is having plans drawn for a factory to replace the one recently destroyed by fire.

The construction of municipal water works at Williamson, W. Va., has been authorized, and purchase of machinery will be considered at some time during the summer.

It is reported from Maumee, Ohio, that the Phoenix Light & Power Company, R. R. Livingston, engineer, is developing a water power near there and has placed an order for the necessary machinery. This will consist of two 26-in. twin hydraulic turbines inclosed in plate steel cylindrical casings, designed to operate under an effective head of 61 ft. They are to be direct connected to two 937 k.v.a., 2300 volt, three phase, 60 cycle alternating current generators, and will be governed by an oil pressure mechanism provided with hand regulator. There will also be a generator of 450 k.v.a. driven by an hydraulic turbine previously installed.

Firms in this district have been advised that the Tidewater Portland Cement Company will build a 3000-barrel plant at Union Bridge, Md., consisting of crusher house 74 x 76 ft., with storage 17 x 76 ft., raw mill 60 x 96 ft., coal house 50 x 96 ft., kiln building 122 x 224 ft., finishing mill 60 x 144 ft., and other structures, including machine, forge and woodworking shops for repair work.

The contract at Wheeling, W. Va., for steel lock gates to be used in dam work on the Ohio River has been awarded the Independent Bridge Company, Pittsburgh, Pa.

The Ridgeway Dynamo & Engine Company, Ridgeway, Pa., will furnish the equipment for the new electric power plant at Fort Sill, Okla.

The Titusville Iron Company, Titusville, Pa., will build a gas engine of 250 hp. for direct connection to a General Electric generator in the power house of the Titusville Electric Light & Power Company. This unit, which will operate on natural gas, is to be added to two of similar type and capacity already in successful service. The city of Titusville operates a steam plant which does not show nearly as good economy.

The Pittsburgh Filter Mfg. Company, Pittsburgh, has received a contract from the city of Hamilton, Ohio, for a large water softening plant.

The Indiana Foundry Company, Ltd., Indiana, Pa., manufacturer of sand dryers, &c., has added a building, 38 x 80 ft., fitted with facilities for automobile work, intending to repair automobiles, sell supplies, &c. The foundry and machine shop are busy on miscellaneous orders.

The factory of the Pittsburgh Plate Glass Company was destroyed by fire May 1. The loss is estimated at over $1,000,000.

The Simonds Mfg. Company, Liberty avenue and Twenty-

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fifth street, Pittsburgh, has recently installed in its machine shop a motor driven Betts boring mill having a capacity of from 7 to 10 ft.

The Erie City Iron Works, Erie, Pa., builder of steam engines and boilers and feed water heaters will erect another shop at Erie, 100 x 300 ft., to cost $50,000. It will stand on part of the old site of the Stearns shop, near the Erie City plant, and will be used as a place in which to build stacks and tanks. It is understood that other buildings are contemplated, as the company is so rushed with orders for engines and boilers that expansion is necessary.

Cleveland

CLEVELAND, OHIO, May 3, 1910.

Manufacturers of machine tools report a good, steady volume of orders; some booked as many new orders as their shipments amounted to during April. They state the outlook is good, although nearly all the business coming out now is in small inquiries. Railroads are buying more freely than they have been for some time, but no lists of any size have reached this market from that source. The demand for heavy forging machinery has improved materially. A large part of this business is in single machine orders. The demand for drilling machinery and automatic machines continues quite active and makers are not catching up on deliveries.

With the local machinery houses business continues quiet. Not many inquiries for standard tools are coming out and sales are nearly all for single tools. Few manufacturing plants appear to be adding much at present to their equipment and the business that is being received is from scattering sources. The Cleveland Board of Education is in the market for about 40 tools for the Technical High School. The only other inquiry of any size that has come out during the week is from the American Rolling Mill Company, Middletown, Ohio, for about a dozen good sized tools for machine shop equipment. Only a small amount of business is to be noted now from the automobile trade and dealers feel that with the heavy buying during the past few months the demand from that source will not be heavy for some time. Taking April as a whole the business of the local machinery houses aggregated less than that of March.

A meeting of makers of radial and upright drills was held in Cleveland April 27 to consider the question of prices. A readjustment was made and it is understood that an advance in prices was agreed upon.

Local manufacturing plants continue very busy, but in some lines there is complaint that new orders are not as numerous as desired. Plants making heavy handling machinery and steel plant equipment have enough work on hand to keep them busy several months. The demand for industrial cars and locomotives continues quite active. Machinery supply houses report a very good volume of business.

In the foundry trade the light gray iron plants are very busy, but the demand for heavy castings has fallen off somewhat.

The Board of Education of Cleveland has issued a list of machine tool requirements for the Technical High School, for which bids will be received May 16. The list is as follows: 25 lathes, with 5-ft. bed and 14-in. swing, 12 to have tapir turning attachment, F. E. Reed Company's 14-in. swing engine lathe or equal; three shapers, with table having 19-in. horizontal travel and 14-in. vertical movement; Gould & Eberhardt high duty 14-in. shapers or equal; two universal milling machines having range of 20 x 7 x 18 in., with 10-in. swing and 16 in. between centers, Cincinnati Milling Machine Company's No. 1½ universal Cincinnati millers or equal; one universal cutter and tool grinder, with attachments, Cincinnati Milling Machine Company's No. 1 universal cutter and grinder or equal; four speed lathes 11 in. x 4 ft., with attachments, J. G. Blount Company lathes or equal; one 21-in. swing drilling machine, Prentiss Bros. Company 21-in. swing drill or equal; one tool grinder, No. 4, made by J. G. Blount Company or equal; one power hack saw, 12-in. blade and 6-in. stroke; one portable electric center grinder, with attachments; one hand power arbor press.

The Ajax Mfg. Company, Cleveland, reports that it has more orders on its books for forging machinery than ever before and a record breaking number for heavy machines. Orders received during April were nearly equal to those booked in March, which was the best month in the company's history. It has recently taken the following forging machine orders: One 6-in. machine and one 4-in. universal machine for the Baltimore & Ohio Railroad; one 6-in. machine for the Pittsburgh Steel Products Company; one 6-in. universal machine for the Chicago & North Western Railroad; one 5-in. machine for the Ingalls & Shepard Forging Company, Harvey, Ill.; one 5-in. machine for Billings & Spencer, Hartford, Conn.; one 5-in. machine for the Delaware & Hudson Railroad; one 4-in. machine for the Wheeling & Lake Erie Railroad; one 4-in. machine for the Erie Railroad; one 4-in. machine for Wyman & Gordon, Worcester, Mass.; one 4-in. machine for the Anderson Forge & Machine Company, Detroit, Mich.; one 4-in. machine for the Lewis Spring & Axle Company, Jackson, Mich.; one 4-in. machine for the Willys-Overland Company, Toledo. Ohio.

The Fanner Mfg. Company, Cleveland, reports that it is full of work and running to full capacity in all departments. The company has a large amount of automobile work in its foundry and has enough orders on hand in its malleable and gray iron casting departments to keep it busy well up into the fall.

The Foote-Burt Company, Cleveland, maker of multiple spindle radial drills, reports that the volume of orders is holding up well. The company is sold up on its heavy tools until about October 1 and has orders booked for nearly all of its standard tools until that date. A better volume of inquiries is being received from the railroads, but they are for small lots of tools.

The Cleveland Enameling & Mfg. Company has recently completed a new plant on Quincy avenue, Cleveland, and will make a specialty of steel and cast iron enameling. The plant consists of two brick buildings, 65 x 125 ft., two stories, and the other a single story structure, 30 x 50 ft. The company now has two ovens running. Frank Pohs is manager.

The McMyler Mfg. Company, which recently completed negotiations for acquiring the plant of the Interstate Engineering Company at Bedford, Ohio, a suburb of Cleveland, will dismantle its Cleveland plant and move its main office to Bedford. An extension to the machine shop at the Bedford plant is under consideration.

Plans have been completed and contracts will be let shortly for the erection of a new steel castings plant in Sandusky, Ohio, according to reports from that city. Herbert Farrell of Nashville, Tenn., is at the head of the new company.

The Horsburgh & Scott Company, Cleveland, gear maker, has increased its capital stock from $60,000 to $125,000. No plant extensions are planned for the present. The company reports that it has all the work that it can do.

The Marion Tractor Company, Marion, Ohio, maker of gasoline traction engines, has decided to remain in that city, a large amount of money having been subscribed for stock by citizens of Marion. It is announced that work of making extensive additions to the plant will be started at once.

Tyson & Co. is the name of a new manufacturing concern in Canton, Ohio, organized by Frank Tyson and Joseph Biechele. The company will make freezers, pasteurizers and dairy appliances in the plant at Washington avenue and Spring street formerly occupied by the Chaddock Reversible Glove Company.

The Thomas Steel Company, Niles, Ohio, suffered a $20,000 fire loss April 25. The power house was badly damaged, but the company has made arrangements to be running on full time May 5.

The Garry Iron & Steel Company, Cleveland, which is building a new plant in Youngstown, has increased its capital stock from $300,000 to $700,000.

Cincinnati

CINCINNATI, OHIO, May 3, 1910.

Although machine tool builders of this market are thoroughly conversant with the trend of trade, which has seen a considerable falling off in inquiry and orders during the month of April, they are not complaining. The condition of most order books is such that there has appeared no necessity for curtailment in any direction. About the only appreciable difference in plant conditions is that prompter deliveries are assured, and in the case of lathes, radial drills, planers, shapers and some sizes of gear cutters practically immediate deliveries are promised.

The rapidly increasing use of natural gas in this market to take the place of coal as fuel has stimulated the sale of gas engine generators, and the electric power department of the Triumph Electric Company is rushed with orders for units ranging from 40 to 150 hp.

The Kern Machine Tool Company, Cincinnati, reports April to have been a satisfactory month both in the domestic and foreign division. A recent shipment of about 24 upright drills was made to Russia and Sweden.

Present and contemplated improvements at the big plant of the Lunkenheimer Company in Fairmount make that part of the city a very interesting place at this time. The brass foundry, a large building of concrete, has but recently been finished, and now an extension of the main offices of the company has been ordered and will be rushed to completion. The new office division will be used exclusively by the ex-

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ecutive officers. It will be erected on the west of the original office structure at Tremont and Beekman streets, 80 x 90 ft., two stories and basement.

The annual convention of the International Railway Car Foremen's Association is in session this week at the Grand Hotel. S. P. Egan of the J. A. Fay & Egan Company, chairman of the Entertainment Committee, has arranged an interesting programme. Delegates will be here from all parts of the United States and Canada.

The S. Obermayer Company has just shipped a large order of foundry facings and supplies to Colon, Panama, to be used in the Government foundry there.

Foundrymen in this trade are not pleased over conditions, and are taking a firm stand against what they term an ill advised determination of the molders and coremakers to strike unless allowed a 50c. per day advance. The present wage is $2.75 per day; the workmen demand $3.25. Business with all jobbing foundrymen in this market has fallen off in the past two or three months, and those most prominent in the trade profess to see no early relief. Another meeting was held by the men on Sunday, but no communication from them has as yet reached the proprietors.

The Fort Wayne Rolling Mills, Fort Wayne, Ind., reports a heavier output for April than March. This concern is operating full in all departments.

The Case Crane Company, Columbus, Ohio, reports the heaviest business in its history and operating to capacity. Among the larger orders of the past month were a number of electric cranes, some of 50 tons capacity, for the new plant of the Republic Iron & Steel Company at Youngstown, Ohio.

The Girard Iron Company of Lisbon, Ohio, which suffered the loss by fire of its blacksmith, machine and carpenter shops recently, has begun to rebuild. The loss was estimated at between $15,000 and $20,000.

It is reported from Columbus, Ohio, that the officials of the American Cash Register Company are considering the enlargement of the factory in West Broad street, that city, to take care of rapidly increasing business. It is stated that orders have been received in excess of the producing capacity, notwithstanding the fact that the company has been operating overtime for several months.

The New Era Gas Engine Company, Dayton, Ohio, has sold out its autocycle business, and with it the entire plant and equipment, except such tools and appliances that are only adaptable to its gas engine department. The company now plans to equip a new factory for the exclusive manufacture of gas and gasoline engines. Catalogues on all sorts of small tools and appliances are desired.

A fire in Cincinnati, May 1, practically destroyed the plant of the Cincinnati Roofing Tile & Terra Cotta Company.

Detroit

DETROIT, MICH., May 3, 1910.

With the opening of Lake navigation marine work has been given the stimulus usual at this season of the year, and from now on it will play quite a part in the industrial activity of the cities of this section bordering on the great water routes. The handling equipment for bulk cargoes and other machinery contiguous to docks, wharves and ships is also being enlarged or put in order to meet the heavy movement of traffic expected. All of this has exerted an appreciable effect on the work of the various local shops, and in many instances the use of night shifts has been necessitated where these did not exist before. So many plants upon which marine interests formerly depended, particularly foundries, have been weaned away by the automobile trade that some difficulty has been experienced in getting work done promptly. A part is being diverted to inland shops and much more will have to be sent to such plants before the season is over.

Owners of motor boats, of which there is now legion, are also clamoring for repairs or new fittings, and delivery of craft ordered during the winter is being demanded.

Manufacturers of machine tools find trade rather quiet, and work in some of the shops appears to have slackened slightly, despite the large volume of orders which is still in hand. A good deal of buying for the fall trade is, however, expected to set in before long and there seems to be a feeling that considerable railroad business will materialize during the summer.

In the northern and western sections of this State there are quite a few manufacturers who have built up their business principally by supplying the logging, saw mill, wood working and pulp mill industries. For all of these, except where influenced by adverse local conditions, the past six to eight months have been exceedingly prosperous; and they now constitute, in their turn, a good support to the general machinery market. During the usual warm weather dullness most of these will undertake enlargements of extensive improvements in equipment, and some interesting announcements can be made shortly.

A visit to the works of the Detroit Seamless Steel Tubes Company, Detroit, reveals something of the activity of the demand this year for cold drawn steel products, which is crowding the shop with orders.

The Shaw Electric Crane Company, Muskegon, Mich., whose activity was recently noted in this report, will install five of its large traveling cranes, up to 30 tons capacity, in the extended plant of the United Engineering & Foundry Company, Youngstown, Ohio.

From South Bend, Ind., it is reported that the plans of the Indiana & Michigan Electric Company for building a large new turbine power station at that place are about to be consummated. Equipment details, however, have not yet been announced.

The intention which is said to have been entertained for some time past by the Michigan Buggy Company, Kalamazoo, Mich., to embark in the automobile business, will soon take form in the erection of several new buildings, work on which has commenced.

It is reported that the plant of the Ionia Wagon Company, Ionia, Mich., has been taken over by the Hayes Auto Company and will be used in future for the manufacture of automobile bodies.

The Campbell-Smith-Ritchie Company, Lebanon, Ind., will soon complete a large addition to its factory. Present requirements in the way of machinery have been provided for, but some further equipment will be needed later on.

Construction of water works is under consideration by the authorities at Utica, Ohio.

The contract for constructing a 65-ft. standpipe to be used in connection with the water works system at Kalamazoo, Mich., has been awarded the Chicago Bridge & Iron Company.

From Toledo, Ohio, it is reported that the Toledo Metal Wheel Company's business has increased to such an extent as to necessitate a large addition to its plant. Plans for a new building are now under consideration.

Some new operating machinery, including power equipment, will be purchased this spring for the plant of the Clay Products Company, Brazil, Ind. Four kilns are also to be installed.

Pumping machinery will be required some time this year at Boyne City, Mich.

The Bentel & Margedant Company, Hamilton, Ohio, are making a specialty this season of woodworking tools for both steam and electric railway repair shops. From the latter source, especially, there is an excellent demand.

Geo. E. Mercer, Bowling Green, Ohio, is providing for the installation of a new crusher to double the capacity of his plant there.

Unless arrangements are made in the near future to have water works at Ann Arbor, Mich., acquired by the city and extended, it is probable that a municipal pumping plant will be built.

Thourlow Titus will build a new foundry, of steel and concrete construction, at Coldwater, Mich.

The Regal Motor Car Company, Detroit, has begun work on building No. 9, which, when completed, will give this company approximately 1,000,000 ft. of floor space. The new building which is now under construction is 249 x 500 ft., two stories, of brick, steel and concrete. An interesting feature of the building is a circular driveway which goes entirely around the interior of both floors. The large trucks which are used in handling material can be carried to the second floor by either of two elevators. This plan has been found economical in handling stock and provides quick access to all material. Special care has been given to the lighting and ventilating of the building. North of this building a quarter mile cinder track has been constructed with high banked curves for testing cars, and in the center is a test building. Inclined planes are provided for hill climbing tests.

The Detroit Stove Works, Detroit, Mich., is erecting two large additions to its plant. One is a four-story building, 60 x 170 ft., to be used in the manufacture of house heating furnaces, and the other a five-story brick building, 66 x 184 ft., for general manufacturing purposes.

The Hardy Mfg. Company, Hudson, Mich., has plans under way for moving its plant for the manufacture of sprayers from that point to Lansing, Mich. It is understood the new plant will employ nearly 100 men.

Milwaukee

MILWAUKEE, WIS., May 3, 1910.

The gain in market conditions referred to last week has not been held in its entirety; nevertheless, trade in machinery of almost every kind continues fairly good and dealers in this section appear to be generally satisfied with the outlook for the immediate future. The erection of new factories, which fell off considerably during March and the first part of April, even with favoring weather conditions, is again a prominent factor of the situation, inasmuch as orders

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for machinery with which to equip these plants are coming in very steadily. Additions to existing plants are not so numerous as they were earlier in the year. The demand from this source centers more in plans for replacements and a better utilization of floor space already available.

Extension of foundry capacity both for iron and steel castings, which has been a notable feature of activity in this State during eight to twelve months past, goes steadily on. A number of new projects of considerable importance have been announced recently and more will follow within the month. Particularly noteworthy is the tendency to increase the present output of crucible steel. Castings made of special alloys will also need to be provided for in constantly increasing ratio and for brass and aluminum parts there is a rising demand.

The extent to which the automobile industry is taking hold on this State has already been commented upon. Of scarcely less importance is the quiet but rapid expansion of facilities for the manufacture of agricultural implements and machinery, including gasoline motors for use in farm work. Not only are the large, long established manufacturers entering upon extensive shop additions, but quite a number of new companies have been formed recently for the purpose of producing various patented specialties. All concerns interested in this line of trade are very active in broadening their markets. Preparations are already in progress for very extensive displays at the various State and County fairs and other exhibitions held throughout the United States, and a vigorous campaign in Western Canada is also being planned by various interests. The latter involves in some cases the establishment of branch factories at or near Winnipeg. Russia, Siberia, Roumania and Argentina, as well as other agricultural countries where increased sales are a possibility, will also be invaded more virgorously than at any time heretofore. There is a growing disposition to cultivate these markets not only for the disposal of an occasional surplus, but with a view to steady custom. In their total effect on the industrial welfare of Wisconsin, the activities referred to cannot fail to be very appreciably felt.

Reballasting of steam and electric lines, and the movement for good roads throughout the West, continues to stimulate the demand for apparatus of all kinds used in connection with the crushing and utilization of material for each of these purposes. The larger plants have for some time past had about all they could do to keep up with orders, and a number of others who were almost unheard of here prior to this season have become important factors in the business. A great deal of trade has been going to concerns in Iowa, where crushing machinery of moderate capacity is now quite largely manufactured.

Sales of machine tools are rather more frequent than they have been and cover a wider range of service. Some railroad buying has developed lately, although not in lots of any size. Industrial plants continue to furnish the best custom of local manufacturers.

A new steam boiler and some additional machinery have been installed in the plant of the Columbia Silica Company, Portage, Wis.

The Rhinelander Iron Company, Rhinelander, Wis., which operates a machine shop and foundry, is building a plant, 30 x 50 ft., which will be used for custom repairing, including automobile work.

The city of South Milwaukee, Wis., has awarded contract for a 1,000,000 gal. filtration plant to the American Water Softener Company, Philadelphia, Pa.

The Simmons Mfg. Company, Kenosha, Wis., will add extensively in the near future to its line of alternating current motors for machinery drive.

On May 1 the general sales offices of the T. L. Smith Company, Milwaukee, were brought back to this city from Chicago and established in the Majestic Building. The Chicago headquarters will be retained as a district office in the Old Colony Building.

The Smalley Mfg. Company, which has a foundry and implement plant at Manitowoc, Wis., is reported to be planning the erection of another large factory building to be used in a different line of production.

The Independent Electric Mfg. Company, Milwaukee, in regard to which the writer has no more definite information, has been incorporated.

As a part of extensive improvements to be entered upon this season by the Sheboygan Railway, Light & Power Company, Sheboygan, Wis., the erection of modern repair shops is proposed.

The business of P. E. Brickheimer, Elkhart Lake, Wis., has been purchased by a new company, and a larger factory is to be built at Sheboygan, Wis. The dimensions outlined are 50 x 100 ft. Improved machinery, with motors for driving it, will be installed.

The Ashland Light, Power & Street Railway Company, Ashland, Wis., has secured Prof. D. W. Mead, Madison, Wis., as engineer for its new power development.

Extensive plans will be worked out this season for additions to be made to the works of the Chicago Brass Company, Kenosha, Wis., which already has one of the best equipped plants in the country for its size.

Three boilers will be required for a new plant 40 x 150 ft., which the Sheboygan Evaporated Milk Company, Sheboygan, Wis., is to erect at Jefferson, Wis. Further particulars can be given later. C. S. Stevens, Sheboygan, is president of the concern, which was recently organized.

Contract for the steel to be used in the new foundry of the National Brake & Electric Company, Milwaukee, has been let to Jos. T. Ryerson & Son, Chicago, Ill.

It is reported from New London, Wis., that the National Condensing Company will erect a large addition to its factory there, but it does not involve the purchase of any new apparatus.

The extent to which the growth of the motor car and automobile supply industries is affecting the manufacturing communities in Wisconsin may be seen in the fact that at Racine, Wis., the housing of workmen has become a serious problem. For large numbers of new employees in the factories there no dwellings are at present available, and the city has no suburbs; consequently, living accommodations have to be found in cities some miles distant. Racine now has about 245 factories.

The Merchants and Manufacturers' Association, Milwaukee, invites correspondence with its Committee on New Industries by parties seeking locations for plants and capital for substantial manufacturing enterprises.

Fairbanks, Morse & Co., Beloit, Wis., are putting out two new traction plows of 25 and 60 hp., driven by gasoline engines.

The J. B. Mitlin Motor Company, Menominee Falls, Wis., has started a repair shop for automobile and other work.

The Racine Gas Engine Company, Racine, Wis., whose need of increased manufacturing facilities were recently referred to, may decide in the near future to build an entirely new plant. This would be an excellent industry for some enterprising town to secure.

Among installations recently made by the Lyons Boiler Works, De Pere, Wis., is one of a 500 hp. boiler added to the plant of the Canal Lumber Company, Seattle, Wash.

The entire motor stock of the National Brake & Electric Company, Milwaukee, whose works are now devoted wholly to the manufacture of air brakes and compressors, has been sold to the Gregory Electric Company, Chicago.

It is reported from Ashland, Wis., that the Chicago & North-Western Railway Company will begin work there this summer on a dock equipped with machinery as complete as that provided for the new docks at Escanaba.

The principal contract for the new municipal power plant at Black River Falls, Wis., is stated to have been let to the Minneapolis Steel & Machinery Company, Minneapolis, Minn.

An addition will be made shortly to the East River Planing Mill, Green Bay, Wis., and new machinery installed.

It is announced from Hatley, Wis., that the timber cutting plant of J. A. Porter, which recently burned, will not be rebuilt.

Prof. D. W. Mead, Madison, Wis., has drawn plans for a hydroelectric plant to be built on the Rock river by the Rockford Water Power Company. Details, however, have not yet been fully worked out and machinery will not be purchased for some time to come.

It is reported from LaCrosse, Wis., that an inventor of that city, W. T. Ensign, who is unknown to the writer, has perfected a pistonless gas engine. Those who are interested in light motors may find this a matter which it will pay to investigate.

Klatt Bros., Beaver Dam, Wis., who operate a box factory and wood working plant, have had plans prepared for a new building, 40 x 100 ft., of steel, iron and concrete construction. Additional equipment required will include a battery of boilers, engine and power transmission machinery.

A new foundry building 48 x 100 ft. will be built on the south side of Milwaukee adjacent to the Eleventh avenue viaduct. W. H. Shenners & Co. of this city are acting for the owners.

The Becker Mfg. Company, Two Rivers, Wis., is erecting a new foundry building 40 x 60 ft., as an addition to its plant. A four-ton traveling crane will be installed, but no other equipment will be needed at present.

The Harvey Forging Company, Racine, Wis., is erecting an addition to its plant, 50 x 90 ft., two stories, of brick and steel. The main floor will be used as a machine shop, and the second floor for storage. It is stated that no new equipment is needed.

The Gilson Mfg. Company, Port Washington, Wis., is just completing the erection of a two-story brick addition to its machine shop, which gives the company over four acres under roof. The company will shortly begin the erection of a warehouse, about 60 x 100 ft., and during the coming summer will erect a new power house with gas producer engines direct connected to electric motor.

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The Wisconsin Foundry Company, Milwaukee, is building an addition to its foundry, 80 x 84 ft., and expects to install another crane and cupola.

Power for the new factory which the Harley-Davidson Motor Company are to erect in Milwaukee will be furnished by gas or gasoline engines.

M. G. Hoffman, Merrill, Wis., whose plans for a box factory in the South were recently mentioned, has been in Bay City, Texas, investigating conditions there, with a view to possible location of the plant in that vicinity.

The Filer & Stowell Company, Milwaukee, is meeting with an excellent demand from all of the principal timber districts of the country for its patented steam set works of the Cunningham type, which are very positive in action.

The Northwest

ST. PAUL, MINN., May 2, 1910.

Inquiries for machinery of all kinds usually sold in this territory are again fairly liberal, but only a few orders of any size have been placed lately and prospective business does not promise a large volume of returns. Buying is mostly in lots of two or three machines, where more than a single one is specified, and it has been scattered among manufacturers in widely separated districts. Representatives of Eastern houses, especially those recently established here, are making a thorough canvass for business, with the result of getting a very good share. Local dealers who have enjoyed a fair trade for years past with pretty much the same general line of customers are compelled to bestir themselves more than formerly to retain it. Some of these, however, have the advantage of excellent repair departments, and all such are very helpful adjuncts at the present time.

Among the boiler and machine shops, forging plants, foundries and factories there is no outside sign of any letup in demand. Even a complete cessation of buying, except for the fear of its lasting indefinitely, would not seriously affect actual production for a long time to come. During the summer replacements of machinery will be made in quite a number of plants. The greater part of this equipment, where terms of delivery need to be taken into consideration, has already been ordered; and the remainder will be gradually bought as required for installation. Fall extensions are also planned which will have an important bearing upon the market after August 1, or even earlier. From present indications the last quarter of the year will witness more plant additions in this section than the preceding nine months put together.

Shops for street and interurban lines, as well as some of the branch steam lines, are being planned to a greater extent than machinery men here remember to have ever been done before, and some nice orders from this source are anticipated. Most new industrial plants of any size are also providing repair outfits, which usually include lathe, drill press, grinders, pipe cutters, saws, &c., as well as considerable auxiliary apparatus.

The Twin City Rapid Transit Company, Minneapolis, will soon start work on a new building which is to include a car repair shop of considerable size equipped with a full line of tools for work of that character.

A new boiler and some additional operating machinery have been installed by the Warland Lumber Company of Spokane, Wash., in its plant at Warland, Mont.

The Parlin & Orendorff Plow Company is about to start work on its new seven-story warehouse in Minneapolis.

The plant of the Farnham Lumber Company, Wilton, Minn., which was recently destroyed by fire, will be rebuilt for larger capacity.

The construction of an electric power and pumping plant to be operated by the city is under consideration at Challis, Idaho.

A gas producer, gas engine and electric generator of 300 kw. are to be installed in the fall by the Crescent Milling Company, Fairfax, Minn.

It is reported from Washburn, N. D., that the North Dakota Heat & Power Company, whose office address is not given, will complete a large hydroelectric plant at a place named Energy, about 25 miles north of there, and run transmission lines to various communities, including Valley City.

Bonds for a lighting plant, water works, &c., have been voted at Wheatland, Wyo., where the letting of contracts will take place early in the summer.

Advices from Lewiston, Mont., are to the effect that the County Commissioners have awarded contract for a steel bridge at Fullerton to the Security Bridge Company, Minneapolis.

The Gas Traction Company, Minneapolis, will erect a foundry 80 x 140 ft., two stories, of reinforced concrete, a warehouse 100 x 200 ft., and a forge shop 135 x 155 ft., the two last named buildings being of brick.

The power plant operated by the city of Granite Falls, Minn., which comprises principally two Sprague dynamos, one driven by an Ideal engine and the other by a Dayton turbine wheel, will be extended along the lines of hydroelectric development. Riparian rights permitting this have recently been acquired.

A small dynamo set for public lighting may be purchased this spring at Keewatin, Minn.

Improvements are being made in the mechanical equipment of the Duluth Crushed Stone Company, Duluth, Minn., with a view to increased efficiency. No additional machinery is, however, needed at this time.

Preliminary plans for the hydroelectric development of the Dakota Power Company, Rapid City, S. D., recently alluded to, indicate that it will include as the initial installation three alternating current generators of 500 hp. each, driven by hydraulic turbines operating under a 280-ft. head, together with exciter units, transformers, switchboard, transmission lines, &c.

The Clyde Iron Works, Duluth, Minn., have had all they could do since early last fall to fill the demand for self-propelling steam skidders, of which that concern makes a specialty. In the South and on the Pacific Coast it has been notably strong.

The Wherland Electric Light Co., Redwood Falls, Minn., has been granted a franchise for street lighting and the distribution of electric current at Morton, Morgan and North Redwood, Minn., and will purchase the distribution equipment that will be required.

The extensive system of public utilities proposed for Miles City, Mont., will soon reach the construction stage. Plans for a pumping and sewage station and electric plant are now being drawn by experts in the employ of the municipality. Purchase of material and machinery will be considered at some time during the summer.

The Southwest

ST. LOUIS, MO., May 2, 1910.

While the market for machinery is not as strong as it has been, a fairly good demand exists for standard apparatus. Bond issues for public works voted at the April elections are beginning to stimulate buying in behalf of communities, as recently predicted, for electric power and lighting plants, pumping stations, steel storage tanks, water distribution and sewage systems, crushing equipment for road improvement, &c. This will undoubtedly continue in a rising measure for eight or ten weeks and then gradually diminish. Industrial establishments, including those of the metal working industries, have to quite a degree fulfilled their present requirements; but new plants or additions erected during the summer and early fall will call for much equipment which is yet to be figured on, and these lists are coming out at intervals as building plans mature.

Another factor of growing importance, which will be especially prominent for the next few months, concerns the mechanical equipment of large office buildings, hotels, institutions, &c. More apparatus of this character is needed in centers of population all through the Southwest than for any two seasons previous and the demand shows a tendency to steadily expand.

In the line of hydroelectric developments, for which heavy purchases of machinery will eventually be made, several important projects are rapidly nearing the construction stage. Financially these are on a much more substantial footing than the majority of those brought forward in earlier years, and equipment houses will find them well worth following up. The great utility of low-head turbines for generating power from streams in the immediate vicinity of large industrial communities is becoming quite generally recognized through this section, and it is not difficult, at the present time, to interest local capital in such plants.

The Joseph F. Wangler Boiler & Sheet Iron Works Company, St. Louis, is building two large storage tanks for the Trenton Milling Company, Trenton, Mo.

The United Water, Gas & Electric Company, Hutchinson, Kan., will install a steam turbine of 1500 hp., to operate condensing, which is to be direct-coupled to an alternating current generator of corresponding size.

It is stated locally, but without confirmation, that a new battery of boilers and other machinery for the generation of electric power will be required shortly for one of the plants of the Union Electric Light & Power Company, St. Louis.

The municipal water and light plant at Higginsville, Mo., which has an electric power capacity of 200 kw., will probably be enlarged by autumn.

The Cliffdale Lime Company, Brickeys, Mo., is said to have under consideration the matter of placing steel hoods on their five kilns and erecting a skip hoist for charging purposes.

At El Paso, Tex., the installation of a new 2,500,000 gal. pump for fire protection purposes, with high pressure mains, is recommended.

The Clara Consolidated Gold & Copper Mining Company, operating near Boise, Ariz., will install an electric plant of

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100 kw. or more, consisting of belted dynamo for alternating current, exciter, transformers, switchboard, motors, &c.

Boilers and pumping engines will be required shortly for the new municipal water works at Enid, Okla.

The plant of the Kirksville Gas Company, Kirksville, Mo., will be doubled in generating capacity and a new steel holder erected.

The Middlewest Stone Company, said to be connected with the Middlewest Portland Cement Company, is building a crushing plant at Gas, Kan. The machinery has been ordered.

The Goit Mfg. Company, Oklahoma City, Okla., is putting on the market a special type of iron and steel dump cart which has been found particularly applicable in concrete work.

It is reliably stated that work on the 8000 kw. hydroelectric power development of the Pike County Water Power Company, for which the Fuller-Coult Company, St. Louis, are engineers, will begin some time during the coming summer.

The contract for a pumping plant and system of water works at Okeene, Okla., previously mentioned, has been let to the Southwest Engineering Company, Oklahoma City, Okla.

The contract for a pumping engine to be installed at Fort Riley, Kan., has been awarded the Snow Steam Pump Works, Buffalo, N. Y.

The Peden Iron & Steel Company, Houston, Texas, has taken a contract for 350 miles of wire fencing to be used along the right of way of the Houston-Galveston Interurban Railway Company.

The capacity of the power plant operated by the San Antonio Gas & Electric Company, San Antonio, Texas, will probably be enlarged this season, in order to provide for the increased needs of the San Antonio Traction Company, which it supplies with current.

An oil burning steam power plant or hydroelectric generating station on the Basivpe River, possibly both, will be erected in the near future by the Lucky Tigre Combination Gold Mining Company, Douglas, Ariz. The plans also contemplate installation of additional machinery in the concentrating plant to raise its capacity to 250 tons daily. Electric motors will be used throughout.

The Dalton Adding Machine Company, Poplar Bluff, Mo., which has been considering proposals to remove to Quincy, Ill., has decided to remain at Poplar Bluff, where a site will be provided, and a new plant will be erected.

The city of Centralia, Mo., has let contract for an elevated steel tank of 70,000 gal. capacity to the Des Moines (Ia.) Bridge & Iron Works.

Some new machinery will be installed in the city plant at Inman, Kan., including possibly an electric unit.

A tandem-compound Hamilton-Corliss engine of 1500 hp. is being installed in the Southwestern Milling Company's "A" mill at Kansas City to replace the old power units.

Lee Wilson & Co., whose plans for a new plant to replace the one recently burned at Wilson, Ark., have heretofore been mentioned, are starting work on the new structure, which is to be one of the most modern in the Southwest. Most of the equipment needed for the initial installation has been provided, but more will be required later on.

Machinery has just been installed by Chesbrough & Graves in a new mill at Amite, La. Some additional equipment is to be purchased later.

Contract has been let at Ardmore, Okla., for the installation of three mechanical pressure filters of 1,500,000 gal. capacity.

Machinery for a pumping plant and water distribution system at Cherokee, Okla., will be purchased about June 1.

Two large gyratory ore breakers will be installed during the coming summer in the plant of the Ray Consolidated Copper Company, Kelvin, Ariz., as preliminary crushers for the stamp batteries.

The Neches Iron Works, Beaumont, Texas, in addition to the regular output of its foundry, forge shop and fabricating plant, has had a very busy season in repair work of all kinds for Southern mills and factories. Drilling machinery and tools of this concern's manufacture are also in good demand.

The San Esteban Mining Company, Pachuca, Hidalgo, Mex., will install motor driven crushing rolls and a tube mill for fine grinding.

The Companis Minera de Naica will build a 600-ton smelter at Concho, Chihuahua, Mex.

Plans are under consideration by the Cananea Consolidated Copper Company, Cananea, Sonora, Mex., for the installation of two additional steam turbines and generators of 1500 kw. each. A number of motor-driven air compressors may also be purchased within the next few months.

Prof. J. C. Nagle has been elected city engineer of Bryan, Texas, and will prepare plans and specifications for a new water and light plant and a sewer system for that town.

It is announced that the Santa Fé Railroad has approved plans for new railroad yards and depot at Cleburne, Texas, involving the expenditure of about $350,000.

The board of municipal water commissioners of Temple, Texas, will soon advertise for bids for the construction of a filtering plant there, to have a capacity of 2,000,000 gal. every 24 hours, and also for a clear water well of 500,000 gal. capacity. N. Woernskold is engineer.

The Pearsall Water, Light & Ice Company will erect a water tower and make other improvements at Pearsall, Texas. It will also construct a 15-ton ice plant.

It is reported that a Belgian syndicate has obtained an option on the water works system at San Antonio, Texas, now owned by the San Antonio Water Supply Company, in which the Mississippi Valley Trust Company, St. Louis, Mo., owns a controlling interest. Improvements and extensions will be made if the deal is consummated, it is said.

Charles Bendle will erect a cotton gin at Robstown, Texas.

The Frank L. Buchanan Mining Machinery Mfg. Company has been incorporated with $100,000 capital stock at St. Louis and will have offices in the Houser Building in that city. Frank L. Buchanan is president; J. H. Stump, vice-president; R. G. Phillipson, secretary, and J. S. Brown, manager. The company has not yet definitely decided on a site for its proposed plant, but it will be located either in or near St. Louis. The shop is to be equipped with the latest power machinery for drill, lathe and other work and a foundry will be installed later.

The Peoria Drill & Cedar Company, Peoria, Ill., will build a one-story addition to its present plant, 200 x 600 ft. The company does not contemplate making any extensive purchases of equipment on account of this addition.

The Fort Smith Couch & Bedding Company, Fort Smith, Ark., is in the market for a number of 5, 10 and 15 hp. alternating current motors.

The A. & N. Deering Company, Bronte, Texas, has made a contract with the City Council of that place for the construction of water works to cost $30,000. Water will be obtained from the Colorado River. The pumping station is to be located on the river bank, with a stand pipe inside the city limits.

The Central West

OMAHA, NEB., May 2, 1910.

Trade is light but fairly steady. The volume of buying this month will hardly equal that of April, unless present conditions radically change; yet, from the standpoint of profitable business, it is likely to show up very well as compared with other seasons of normal activity. Material and equipment used for construction work of every description still sells to better advantage than anything else. Power apparatus comes next, with operating machinery for shops and factories in about third position. In the line of foundry equipment there is not any great activity at present; but during the fall months quite a number of plants of moderate capacities will be installed by machinery manufacturers.

From plans now actively under way it is evident that within the coming two years Iowa, and to a less extent Nebraska and States farther West, will be literally grid-ironed with electric traction lines, of which comparatively few have thus far been constructed. Prior to the panic such plans were generally discredited by manufacturers of machinery or material, for the reason that most of the new companies organized were incorporated primarily for the purpose of selling promoters' stock; and, furthermore, where bona fide intentions of building were manifest, payment on purchases was usually offered in the form of the road's own securities, which might or might not prove salable. This year conditions are very much better. A fair percentage of the lines projected will actually be constructed on capital found at home, and funds are apparently available as needed. This business is worth going after, and several of the larger equipment companies located east of the Mississippi River are watching it pretty closely.

Some of the roads built this summer will be equipped with gasoline motor cars, instead of the customary trolley system. A very efficient type of the former is manufactured here in Omaha by the McKeen Motor Car Company, and it has been extensively introduced through various parts of the West.

It is reported from Madrid, Iowa, without confirmation, that the Sutherland Mfg. Company has started work on the foundation of a new plant. No details in relation to equipment are given.

The Ottumwa Iron Works, Ottumwa, Iowa, is putting

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out a very compact form of friction drum electric hoist, fitted with either direct or alternating current motor, which is being largely used in Western mining operations.

Construction of water works is to be taken up this month at Portsmouth, Iowa, and contracts awarded. Purchase of machinery is to follow.

The crushing plant of the Chicago & North-Western Railway Company at Quarry, Iowa, is being remodeled and its capacity greatly enlarged. This will be very extensively used henceforth in the production of ballast.

A machine, forge and wood working shop for repair work will be incorporated in the plans of the Charles City Western Railway, Charles City, Iowa, which expects to build an electric line this summer to Marble Rock.

The Holmesville Mill & Power Company, Holmesville, Neb., will install an electric power plant of 400 kw. capacity, consisting of two independent generating units.

The Des Moines Bridge & Iron Works, Des Moines, Iowa, has been awarded contract for the construction of water works at Mason City, Iowa.

The municipal power plant at Webster City, Iowa, which has a present capacity of 275 kw., will be reinstalled in another location and some new machinery added.

An electric power station will probably be constructed this year at Milford, Neb., and pumping units for a water supply system also installed.

T. H. Proske, Denver, Colo., who manufactures the Ajax drill sharpener, states that they are in use at the Loetchberg tunnel in Switzerland, where a new record for tunneling work has recently been established.

Machinery for an electric power and lighting plant will be bought this spring at Kenesaw, Neb. A bond issue to provide funds is now being placed.

James Campbell, who manufactures brick and tile at Lehigh, Iowa, is improving the mechanical equipment of his plant. A boiler of 100 hp. was recently installed and other apparatus will be required later.

The fabricating plant of the Dodds Steel & Iron Works has been rushed this spring with orders for structural shapes and special material of every description used in construction work where such metal is required. The company's enlarged facilities at Des Moines are more than needed.

S. Robinson, Vinton, Iowa, who has been manufacturing spreaders for a number of years past, will build a new plant, 60 x 300 ft., equipped with the most modern machinery.

Some additional pumping machinery and accessory apparatus will probably be needed this summer for the water supply system at Aurora, Neb.

Plans for a large addition to the repair shops of the Omaha & Council Bluffs Street Railway Company are now being made, and the present intention is to add new tools, including planer, radial drill, wheel grinder, bulldozer or forging machine, hack saw and wood working machinery, all motor-driven. No list has as yet, however, been definitely determined upon.

The Sierra Nevada Mill Company, Salt Lake City, Utah, recently put in operation what is stated to be the most modernly equipped wood working plant in that part of the country. Power for driving the machinery is generated on the premises.

The Dorr Cyanide Machinery Company, Denver, Colo., has been incorporated to put in corporate form the business formerly conducted by J. M. Dorr, who becomes president of the new company.

The Denver Gas & Electric Company, Denver, Colo., which is gradually providing new equipment in accordance with the plans for expansion recently mentioned, has awarded a contract to the General Electrical Company, Schenectady, N. Y., for a steam turbine and generator of the vertical type, with normal rating of 5000 kw. and large overload capacity. This set is for alternating current and displaces the direct current machines now in service in the station.

It is reported from Hampton, Iowa, that a new pump for water service is to be installed there.

A municipal power plant of about 150 kw. capacity is to be built this year at Allerton, Iowa, and an engineering firm of Kansas City has been entrusted with the preparation of plans.

The new water works to be constructed at Durango, Colo., will be planned on the gravity system, but circulating pumps may be needed.

A centrifugal pump of 200 gal. per min. capacity will be purchased at once for municipal service at Orleans, Neb.

The water works at Barnum, Colo., may be acquired this year by the city and their capacity enlarged by additional equipment.

The Davenport Ladder Company, Davenport, Iowa, has purchased a block of ground in that city and will erect a new factory.

The South

CHARLOTTE, N. C., May 2, 1910.

Considerable complaint of price cutting has been heard, of late, among manufacturers and dealers in various parts of the South. How serious this condition is and whether it actually exists to any great extent cannot be definitely learned. Accusations made by representatives of some houses with respect to others, particularly in the line of boilers, power machinery, &c., are so intemperate as to discredit themselves. Apparently, however, trade conditions are not fully justifying the promise made earlier in the year; and the sudden falling away of a portion of the demand, as recently noted, has uncovered some ugly spots. Industrially, however, the Southern States, taken as a whole, were never in better shape than at present. Plants everywhere are busy on orders, large public improvements are in progress, and development work along all lines is being pushed. In everything that makes for stability, progress and increase of purchasing power the present situation could hardly be improved upon under natural conditions.

One of the fields of opportunity for mechanical equipment now existing in the South, of which manufacturers do not seem to take full advantage, lies in the introduction of purification plants for both water and sewage. People down this way feel the need of improved methods; but many still have in mind the ill-fated experiments of some years ago, which local newspapers distorted and exaggerated; so that it is difficult to get them to take up the subject of filtration plants of their own initiative. Results in a number of districts, however, show what can be done in the way of education; and, so far as this has gone, a broader market is opened up for the sale of filters, pumps, compressors, gates, valves, &c., than would otherwise be possible. New installations of machinery also call for more tools used in construction and repair work, including the small machine shop outfits for municipal stations which are now becoming so common; hence all such pioneer effort is widely beneficial to the trade.

Among the industrial communities of the South which have installed filtration plants are Charlotte, Winston-Salem, Durham, Raleigh, Shelby and Wilson, N. C.; Charleston and Columbus, S. C.; Atlanta, Columbus, Augusta, Athens, Macon and Rome, Ga.; Gadsden, Ala.; Vicksburg, Miss.; Shreveport, La.; Chattanooga and Knoxville, Tenn., and Lexington, Paducah and Danville, Ky.

The extent to which machine tools are now required for all large construction work, and the importance of following up opportunities for sales in this field may be shown by reference to the several hydroelectric developments of the Southern Power Company, Charlotte. In connection with the building of each plant a well equipped machine shop, including lathe, planer, drill presses, pipe and bolt cutters and threaders, hack saws, band saws, cross cut saws, forging apparatus, &c., has been maintained, besides boilers, pumps, compressors, hoists and heavy contractors machinery.

In addition to its hydroelectric power developments which now aggregate about 90,000 hp., The Southern Power Co., Charlotte, has decided upon the building of an auxiliary steam turbine plant. During the summer a large number of steel towers for transmission lines will be erected.

At Spencer, N. C., a municipal power plant and also system of water works are to be built this summer in East Spencer.

A complete steam turbine power plant of 500 kw. rated capacity will be installed by the Florida Mining Company, Mulberry, Fla.

The authorities at Dublin, Ga., are planning to increase the size of the power plant now operated by the city, which contains two Fort Wayne engine driven alternators of 300 kw. No purchases have as yet, however, been authorized.

The Knoxville Iron Company, Knoxville, Tenn., is reported to have made preparations for the erection of two new manufacturing buildings.

A large crushing plant will be erected before long by the newly incorporated Bowling Green White Stone Quarry Company, Bowling Green, Ky., which replaces a former company of the same name.

The Van Da Grift Auto Car Company, Louisville, Ky., is about to install, in connection with its new garage, a machine shop equipped for work on any part used in a motor car. Apparatus needed for the present has already been provided.

Among the concerns that are reaping the benefit of the present era of water works construction in the South is the Columbian Iron Works, at Chattanooga, Tenn. The plant of this company, which includes a large foundry and machine shop, electrically operated on current supplied from its own power station, has been crowded with work almost from the start.

A very complete crushing plant, with two large breakers,

The Machinery Markets

elevators, screens, conveyors and power equipment, will be erected this spring by the Wilson Ballast Company, Greenup, Ky.

An electric power and pumping station is to be constructed during the summer at Easley, S. C., where the work has been authorized by the municipality.

The Low Moor Iron Company of Virginia will install a new blowing engine of large capacity at its furnaces in Low Moor, Va.

The Clinton Mining Company, Birmingham, Ala., which is opening up a mine on Red Mountain near Steinman, has placed orders for equipment, including a large ore breaker.

The Cranberry Furnace Company, Johnson City, Tenn., is putting its ore and flux curshing plant, which is equipped with two gyratory breakers, in condition for a heavy season's run.

The proposed hydroelectric plant of 700 to 800 kw. for Bedford City, Va., concerning which there has been a great deal of talk for some time past, appears to be now a certainty, as a bond issue covering more than the estimated cost has been placed. Construction work will commence shortly above Snowden on the James River, and machinery is to be purchased this summer.

The City of Atlanta, Ga., will soon call for bids on new pumping machinery to increase the capacity of its water works to 60,000,000 gal. or more daily. The contract for the last unit installed was filled by the Wisconsin Engine Company, Corliss, Wis.

The Sternberg Foundry & Supply Company, Asheville, N. C., is arranging for the erection of a new machine shop and foundry. The company will buy a 60-in. lathe and a number of smaller lathes, in addition to cupolas, ladles, crane for the foundry and other equipment. The purchasing will be done within the next 90 days.

The Enterprise Foundry & Machine Works, Bristol, Virginia-Tennessee, has increased its capital stock from $30,000 to $50,000 to add to its facilities for manufacturing the Whitney chilled car wheel. The company also makes industrial cars, and it is understood this department will also be extended.

J. R. McQueen of Lakeview, N. C., is associated with a number of associates there in a project to build a hydroelectric plant on Lower Little River, at Lobelia, N. C. A plant to supply power and light to a nearby cotton mill and other interests will be installed, and the company expects to develop at first 400 to 500 hp. The plant will be built during the summer.

The electric light plant at Homer, La., was destroyed by fire April 25.

The municipality of Trenton, Tenn., will issue $12,000 in bonds for the purpose of making repairs to the electric light plant which it recently acquired from a private corporation, and considerable new equipment will probably be required.

The North Pacific Coast

PORTLAND, ORE., April 29, 1910.

The conditions noted in last week's report continue to prevail, but orders lately have been more evenly distributed and the market is somewhat broader, business as a whole being quite satisfactory. In consequence of better deliveries of new machinery, second-hand apparatus does not appear to be as much wanted as formerly. Prices, however, are holding firm for equipment of every class, and there is some tendency towards an advance. Various enterprises which were delayed, because of the fact that machinery ordered in the East failed to arrive on time, particularly during the freight blockades, are now being vigorously prosecuted, with the result of creating still further needs. It is evident that for the next few months, at least, industrial plants of every description will be loaded up with orders, and prospects for the remainder of the year are most encouraging. Public works alone will call for a great deal in the way of equipment and supplies, and the shops of this section are in a position as never before to respond to the requirements of the situation.

The Pacific Coast United Metal Trades Association held its annual meeting at the Commercial Club in Portland, April 22-23, ending with a banquet. On the first day many members visited the local trades school, where draughting, patternmaking, machine work, &c., are taught, and expressed themselves as well pleased with what they saw there. In the evening some attended a meeting of the Oregon Employers' Association, at which the subject of employers' liability legislation was discussed. Transaction of necessary business and the election of officers occupied the second day.

The completion of the new power development of the Oregon Iron & Steel Company, Portland, at Oswego, Ore., will be delayed owing to the plants having been flooded from the reservoir as a result of the clogging or rupture of the outlet pipe. At this writing the cause of the disaster is not clear, but it necessitates draining the reservoir. The work recently in progress has been for the purpose of providing about 1200 kw. of electric power to be used by future industries locating at Oswego. One large plant, that of the Portland Cement Company, is already being built there and will require a considerable amount of current from the very first.

E. K. Anderson, who is in business at Salem, Ore., has organized the Anderson Furnace Company to manufacture and install heating apparatus.

The Star Lumber Company, Star, Ore., contemplates removing its plant to another location and adding some new machinery.

E. C. Rea, Geo. W. Rea and I. H. McCord, Baker City, Ore., have formed the Rea Combination Wrench Company, which is incorporated for $150,000.

The water supply system to be constructed this year at Falls City, Ore., will operate mainly by gravity, very little equipment being required.

The Chamber of Commerce, Bellingham, Wash., has inaugurated an aggressive, well planned campaign for securing new industries. Since it began nearly a score of plants have been induced to locate there.

Four large motor-driven centrifugal pumps will be required for installation near White Bluffs, Wash., in connection with what is known as the Wahlulse irrigation project.

The Valley Construction Company, Oroville, Cal., is erecting a crushing plant near that place which will be one of the largest and best equipped in the State. The future requirements of this company for extensions and replacements are likely to be considerable.

The Waterbury Company, which is represented on the Pacific Coast by Frank J. Sime, San Francisco, has had a particularly good season in the sale of wire rope for logging purposes. Its use in this field is reported to be steadily increasing.

A steam turbine generating unit of 1000 kw. will be installed in the new plant of the Fraser River Lumber Company, Fraser Mills P. O., near New Westminster, B. C., which is to be operated throughout by electric power.

The Northwest Bridge Company, Tacoma, Wash., has secured the contract for erecting a large steel standpipe in connection with the municipal water system there.

Funds will soon be available for the construction by the city of a water plant at St. Helens, Ore., and purchase of equipment is likely to be considered in the near future.

A large new timber cutting mill, with hydraulic power plant, has just been completed at Husum, Wash., by the Husum Lumber Company. Future requirements of this concern, in the way of machinery, are likely to be considerable.

The Keystone Boiler Works, San Francisco, has found business this year very much better than last, and the shop is crowded with current orders.

John Hanbury, Brandon, Manitoba, whose new mill and steam turbine plant at Vancouver, B. C., were referred to last week, will install 35 to 40 alternating current motors with which to operate the machinery, conveying and handling systems, &c.

One of the largest bridge contracts let this year in California has been awarded the Pacific Construction Company, San Francisco, for crossing the Sacramento River at Tehama, Cal.

The capacity of the Heacock & Lawrence Iron Works, Portland, Ore., has been increased recently by rearrangement of machinery and the installation of considerable new equipment.

It is stated that the largest single order for logging engines ever placed in this country is now being executed in the plant of the Willamette Iron & Steel Works, Portland, Ore. It consists of 26 units for the Potlatch Lumber Company, Potlatch, Idaho.

The Railway Equipment Company, Portland, Ore., will have in service by summer a well equipped shop for repairing machinery and other work incident to its business.

The unlooked for extent of requirements for cement in this part of the country, as recently mentioned, will compel enlargement of some of the plants on the Coast which were only recently established. The Washington Portland Cement Company, whose main offices are in Seattle, will increase its capacity to 2000 barrels by the installation of additional machinery. Everything in the present mill is motor operated from an engine driven electric power station.

The Needles Mining & Smelting Company, operating custom smelters and refineries at Needles and Kennett, Cal., Midvale, Utah, Grasselli, Ind., Chrome, N. J., and Pachuca, Mexico, has been putting its plants in the best possible condition and will need a good deal of additional equipment at intervals during the year.

The plant of the Weed Lumber Company, Weed, Cal., improvements in which were recently mentioned, is equipped with special Babcock & Wilcox boilers of 1000 hp., especially adapted for burning mill refuse. They were furnished through Charles C. Moore & Co., San Francisco.

The Union Gas Engine Company of Oakland and San Francisco has put in operation for the Mascot Copper Company a distillate gas engine of 320 hp., which is reported to be the largest prime mover of the type now running.

A small direct current dynamo set will be installed shortly by the Wisconsin Lumber Company, Littell, Wash.

The Nevada Engineering Works, Reno, Nev., is building up a large business in mining and ore reduction machinery, including hoists, pumps and power equipment.

The largest contract for iron piping secured by any company on the Coast for some time past has been let to the Lacy Mfg. Company, Los Angeles, Cal., by the Riverside Water Company.

The Bolte Mfg. Company, Los Angeles, reports a steady run of sales of its new light type of mixer, which is being used by contractors all up and down the coast.

Plans for the proposed filtration plant at Sacramento, Cal., have been adopted by the municipal board and will be put in execution as soon as a bond issue is approved. They involve the purchase of one or more large pumping engines or electrically driven centrifugal pumps, with quite a line of auxiliary apparatus.

Government Purchases

WASHINGTON, D. C., May 2, 1910.

R. C. Holyday, Chief of Bureau, Navy Department, Washington, D. C., will open bids June 4 for steel fuel oil and gasoline storage tanks, for the naval stations at Bradford, R. I.; Norfolk, Va.; Charleston, S. C.; Key West, Fla.; Guantanamo, Cuba, and San Juan, Porto Rico.

Capt. H. B. Chamberlain, Quartermaster, U. S. Army, Fort Morgan, Ala., will receive bids until May 23 for furnishing and constructing an electric light plant at that point.

Lieut. William R. McClary, Constructing Quartermaster, Fort Caswell, N. C., will open bids May 25 for furnishing and installing an electric power plant and lighting system at that point.

James Knox Taylor, Supervising Architect, Treasury Department, Washington, will open bids June 13 for furnishing and installing a new high pressure steam boiler plant and accessories for the U. S. Court House and Post Office Buildings at Pittsburgh, Pa.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will open bids May 17, under schedule 2436, for one No. 3 improved Variety lathe, one wire cutting and straightening machine and one cut off saw, and under schedule 2437 for one pipe expanding and flanging machine. On June 7 bids will be opened under schedule 2440 for one upright drill and one high duty crank shaper.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids April 26 for the following:

Class 14.—Sixteen single-phase oil cooled transformers—Bidder 32, General Electric Company, Schenectady, N. Y., $6549.32; 57, Maloney Electric Company, St. Louis, Mo., $4424.24, part; 68, National Electrical Supply Company, Washington, D. C., $4612.50, part; 107, Westinghouse Electric & Mfg. Company, Baltimore, Md., $6257; 108, Wagner Electric Mfg. Company, St. Louis, Mo., $4864.75, part.

Class 21.—Three motors—Bidder 32, General Electric Company, Schenectady, N. Y., $534 and $687; 78, Richmond Electric Company, Richmond, Va., $588; 108, Wagner Electric Mfg. Company, St. Louis, Mo., $546.95.

Class 61.—Compressed air locomotive accumulator, &c.—Bidder 77, H. K. Porter Company, Pittsburgh, Pa., $18,980.

The National Association of Manufacturers

At the fifteenth annual convention of the National Association of Manufacturers, to be held in New York City, May 16, 17 and 18, the prevention of industrial accidents and employers' liability insurance will be made the principal features. A thoroughly comprehensive report of a committee appointed some time ago by John Kirby, Jr., president of the association, will be made, and the convention will be addressed by Prof. F. R. Hutten of the American Museum of Safety, Miles M. Dawson, who has studied accident prevention abroad for the Russell Sage Foundation, and other eminent speakers. The committee mentioned includes John Kirby, Jr., Dayton, Ohio; James W. Van Cleave, president of the Buck's Stove & Range Company, St. Louis, Mo.; D. A. Tompkins, president of the D. A. Tompkins Company, Charlotte, N. C.; H. E. Miles, president of the Racine-Sattley Company, Racine, Wis.; Henry B. Joy, president of the Packard Motor Car Company, Detroit, Mich., and F. C. Schwedtman of St. Louis, Mo., chairman. The committee, in preparing for its report, communicated with 25,000 employers in all parts of the United States, as well as 250 National, State and local organizations of employers. Special correspondence was carried on with American and European experts, with the State commissions appointed to look into the subject in New York, Wisconsin and Minnesota, and also with the officers of various societies and organizations interested in this work. Among the thousands of letters received by the committee, there were only three protesting, even in a mild manner, against taking up the questions of employers' liability and workmen's indemnity. It was disclosed that 99 per cent. of the membership of the association favors a constructive, progressive policy of dealing with this difficult question.

The convention will last three days, and attention will also be given to such nationally important subjects as uniform State laws, interstate commerce, immigration, fire prevention, merchant marine, banking and currency, patents, national conservation, industrial education and national incorporation.

The Alabama Consolidated Coal & Iron Company

At a meeting of the Alabama Consolidated Coal & Iron Company held at Baltimore, April 29, the representation of new interests on the Board of Directors was provided for, the following directors being elected: Douglas H. Gordon, Wm. Ingle, R. Lancaster Williams, J. Wm. Middendorf and James L. Sellman of Baltimore; H. S. Matthews, Birmingham; Joseph H. Hoadley, New York; K. L. McLaren, Jersey City, and H. F. Meserve, Washington. This gives the Baltimore preferred stockholders control of the property, six of the directors named being identified with the Baltimore interests, while three represent the Hoadley interests. A statement by Wm. C. Geddon, Joshua Levering and Richard H. Edmonds, who resigned from the board, says that they did this that Baltimore interests might be more largely represented, Mr. Hoadley having agreed to turn over to J. Wm. Middendorf and his associates the management of the property. It is understood that the Baltimore syndicate which will now finance the development of the property is backed by European capital. It was given out from last Friday's meeting that the present officers of the company remain. Joseph H. Hoadley is president; H. S. Matthews, vice-president; Wm. R. Sheldon, treasurer, and C. W. Curtis, auditor.

The Best Mfg. Company's Oakmont Plant

The agreement that existed between the Crane Company and the Best Mfg. Company, under which the large plant at Oakmont, Pa., was constructed, has been canceled, and the new plant will now be completed and operated independently by the Best Mfg. Company, whose original plant and main offices are in Pittsburgh. The Oakmont property, which comprises 30 acres, is located 11 miles from Pittsburgh, on the Allegheny Valley Railroad. The buildings in the new plant are all fireproof, and are among the finest erected for manufacturing purposes in the country, consisting of an iron foundry; brass and bronze foundry; machine, pipe, welding, riveting, brass and pattern shops, and large storage warehouses. A large steel foundry and other buildings will be constructed in the near future. The capacity of the present plant will be more than doubled. The buildings are to be equipped in the most modern manner for turning out valves, fittings, flanges, pipes and bends for all pressures and every purpose.

It is not the intention to extend into other lines, but to continue producing high grade work for power plant equipment and increase the company's general casting business. The foundry has a capacity of 90 tons per day, and castings can be handled to advantage weighing 30 tons each. The plant will employ about 1000 men, and will be ready for operation August 1.

Trade Publications

Roll Crushers.—The Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 39; size 6 x 9 in.; pages 16. Covers the Jeffrey line of crushers for coal, coke and salt. The description of these crushers is supplemented by illustrations of the different parts and tables of dimensions. Space is also given to two types of pulverizers.

Hoists.—Weir & Craig Mfg. Company, Chicago, Ill. Loose leaf catalogue. Calls attention to a line of electric hoists, compressed air motors, compressed air geared hoists, and electric and air turntable tractors. Special advantages claimed for these devices are an automatic system of lubrication whereby a small quantity of oil is fed to the moving parts every time they are operated, an interchangeability of parts, and in the case of the air hoists ability to hold the load at any point with the air shut off without a mechanical brake. An illustrated description of a combined compressed air geared hoist and trolley and a compressed air geared hoist was printed in *The Iron Age* April 14, 1910.

Sewage Treatment Apparatus.—Merritt & Co., Camden, N. J. Pamphlet. Relates to the progress made in the design of apparatus for the raising and disposal of sewage by the use of compressed air. The Priestman-Beddos system of sewage control for which this company have acquired the manufacturing and selling rights is explained. The layout of the ejectors in the new Pennsylvania Station in New York City, where this system has been installed, is shown.

Firebrick Arches.—Mayville Specialty Mfg. Company, Mayville, Wis. Pamphlet. Describes the Monarch patented fire-door and back combustion chamber arches. These arches are a combination of cast iron and firebrick, and as their name sindicate are intended to support the brickwork of the boiler setting around the fire-door and at the rear end of the combustion chamber. The advantages claimed for the use of these arches are a reduction in the amount of material required for the boiler setting and ease of making repairs.

Electrical Machinery and Appliances.—The General Electric Company, Schenectady, N. Y. Two bulletins. No. 3919, entitled "Transformer Manufacturing Facilities," is devoted to a description of the works of the company at Pittsfield, Mass., which, it is stated, now constitutes the largest and best equipped transformer manufacturing plant in the world and contains a number of illustrations of the various processes of transformer manufacture. No. 4723 illustrates a line of regulating pole rotary converters designed for use where a variable conversion ratio is required either to maintain constant direct current voltage with varying alternating current voltage or to vary the direct current voltage as required.

Machinery and General Supplies.—H. Channon Company, Market and Randolph streets, Chicago, Ill. Catalogue No. 50; size, 7½ x 9½ in.; pages, 952. Lists a line of machinery and general supplies for steam and electric railroads, contractors, bridge builders, stone quarries, machine shops, factories, mines, blacksmiths, saw, paper, flour and cotton mills, elevators and electric light and water works plants. The descriptions have been made as concise as possible to cover the essential points, and are supplemented by illustrations of the different articles. A number of tables of useful information and an elaborate index complete the catalogue.

Taps and Dies.—Butterfield & Co., Derby Line, Vt. Catalogue. Illustrates taps, stocks and dies for all uses, the Reece and Derby lines of screw plates, reamers and tools for engineers and steam fitters' use. The taps include hand taps and tap drills for nuts, machine screws, stove bolts, boilers, stay bolts and locomotive washout holes. Among the tools shown are pipe and hinged vises and pipe cutters. The reamers illustrated are the locomotive, bridge, taper pin, drill socket and shell types.

Lifting Appliances and Machinery.—E. R. Klemm, 616 West Monroe street, Chicago, Ill. Catalogue. Shows stone handling jacks with wooden and iron frames; windlasses, crabs and winches; crucible tongs, a tilting metal band saw, automobile jacks, and a truck, wagon and carriage wrench. The jacks, in addition to handling stone, are used to line up machinery and to throw large engines over the dead center. The hoisting appliances are made in a number of different types for handling all sorts of work. An illustrated description of the metal band saw was printed in *The Iron Age* February 24, 1910.

Boilers.—The Peerless Heater Company, Pittsburgh, Pa. Catalogue. Describes and illustrates a new line of patented sectional boilers for steam and hot water heating. The special features of these boilers are the securing of a comparatively large amount of prime heating surface by special forms of crown sheet and water tube construction.

New Tool Holders.—The Ready Tool Company, Bridgeport, Conn. Pamphlet. Pertains to the Red-E line of tool holders, which are designed for use with inserted steel cutters of standard forms. Some of the advantages claimed for these holders are a saving in tool steel, as 2 oz. of cutting metal in a holder will do as much work and last as long as a solid tool; one grinding on the top edge of the cutter sharpens the tool and preserves clearance, which saves a considerable amount of labor and lessens the trouble which is experienced with ordinary tools which have to be ground three times, and the cutters for the various types of holders may be adjusted as they wear down, which makes it an easy matter to set all tools at the common level at which the best work is done. *The Iron Age* May 27, 1909, contained an illustrated description of these tool holders.

Electric Fans.—The Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Circular No. 1165. Shows the company's standard and very complete line of electric fan motors for the season of 1910. These motors are designed to operate on the regular lighting circuits at the frequencies and voltages which are in general use.

Metal Sheets.—The Stark Rolling Mill Company, Canton, Ohio. Mailing card. Concerned with Toncan sheets, which are made from a special metal that resists rust and corrosion to a remarkable degree.

Engine and Turret Lathes.—Lodge & Shipley Machine Tool Company, 3055 Colerain avenue, Cincinnati, Ohio. Catalogue No. 21; size, 6 x 9 in.; pages, 112. Contains quite a complete illustrated description of the special features of the company's engine and turret lathes, which is followed by brief specifications and full page illustrations of the standard lathes and the massive pattern screw cutting lathes. The cone headstock model lathes are covered in a similar way, and the balance of the catalogue is devoted to motor drive for lathes and the accessories that can be furnished.

Wire Fence.—Anchor Post Iron Works, 165 Broadway, New York City. Folder. Points out the advantages of a chain link woven steel fence made from galvanized wire with galvanized anchor posts, for inclosing factory grounds. The illustrations include installations of both the chain link fence and another type where the anchor posts are used to support an iron railing. In addition to these two styles, the firm also makes special inclosures for various purposes.

Woodworking Machinery.—The Crescent Machine Company, Leetonia, Ohio. Catalogue; size 4 x 6 in.; 96 pages. Gives general description and specifications of the Crescent line of woodworking machinery. The new features are variable feed planers, round safety head jointers, safety guards for jointers and saw tables, and an improved model of a 20-in. band saw. An illustrated description of the Crescent variety woodworker was printed in *The Iron Age* July 22, 1909.

Lathe Chucks.—S. E. Horton Machine Company, Windsor Locks, Conn. Pamphlet. Refers to the Horton four-jaw independent reversible jaw lathe chuck which was illustrated and described in *The Iron Age* December 2, 1909. The screws in this chuck have three bearings and the jaws are wider at the base than at the top, a feature which gives greater resistance to the thrust caused by the driving of the work. Another advantage claimed for these chucks is that by threading the screws to the extreme end and employing broad bearings it is possible to run the jaws out of the chuck at least one-third of their length and increase the capacity of the chuck by that amount. Seven sizes of chuck, ranging from 8 to 26 in. in diameter, are made.

Tungsten Lighting Fixtures.—Benjamin Electric Mfg. Company, 120 South Sangamon street, Chicago, Ill. Bulletin No. 5. Lists a line of fixtures for use with the Mazda-Tungsten lamps and shows the latest devices brought out for the purpose. The fixtures illustrated and described include models for both outdoor and interior lighting. An illustrated description of two typical fixtures was printed in *The Iron Age* January 13, 1910.

Asbestos Shingles.—H. W. Johns-Manville Company, 100 William street, New York City. Folder. Refers to the use of J-M Transite asbestos shingles as a substitute for the ordinary wooden ones. The advantages claimed for them are that they are practically indestructible, will not break, are fireproof and very easy to apply. The different sizes and shapes of shingles are shown, together with the method of applying them.

Air Brake Valves.—National Brake & Electric Company, Milwaukee, Wis. Bulletin No. 388. Refers to the National motorman's valves for use on air brake electric cars. The proper operation of the air brake depends upon this valve, and while an ordinary three-way valve will accomplish the same functions as a regular motorman's valve, the latter, it is stated, gives better satisfaction as it has been specially designed for this class of service. Four types of these valves are shown, and space is also given to a track sander valve that is intended for use in connection with the air brake.

Sash Operator.—The G. Drouvé Company, Bridgeport, Conn. Mailing card. Treats of the Straight-Push sash operator, an illustrated description of which was printed in *The Iron Age* March 31, 1910. This operator will open or close any number of sashes from one control point, and is designed to meet almost any condition to be found in industrial buildings. The movement of the sash is accomplished by a direct push and pull of the arms attached thereto.

Expanded Metal and Metal Lath.—North Western Expanded Metal Company, 930 Old Colony Building, Chicago, Ill. Two booklets. The first, which is designing data booklet I., is a consolidation of parts of seven other smaller publications and combines in one booklet a large amount of valuable information on the use of expanded metal and expanded metal lath for

building construction. The other, No. 8, is a highway bridge booklet and refers to the use of expanded metal for reinforcement in all sorts of bridges.

Trolleys and Cranes.—Pawling & Harnischfeger Company, Milwaukee, Wis. Bulletin No. 17, superseding No. 14. Shows the I-beam trolleys and the chain block traveling cranes manufactured by this company. The former, as its name indicates, is designed to travel on the lower flanges of single or double I-beams and is adaptable to conditions of special requirements where long span track construction is necessary. The chain block traveling cranes are designed as a substitute for small electric travelers where the plant is unprovided with electric current, and both devices are said to be very useful for handling material of moderate weight.

Planing Machines.—S. A. Woods Machine Company, Boston, Mass. Folder entitled "Modernizing Old Shops." Contains a reprint of an editorial bearing this title from *The Iron Age* February 17, 1910, and refers to the fact that the company stands ready to help all manufacturers modernize their mills by using the latest types of machinery.

Finishing Steam Turbine Disks.—Gisholt Machine Company, Madison, Wis. Loose leaf circular. Illustrates and describes the finishing of steam turbine disks on a Gisholt 42-in. vertical boring mill. The entire operation from facing the rough forging to completely finishing the disk was performed in this machine, and it is stated that the work was completed in greatly reduced time and had a very fine finish.

Drop Forgings.—Anderson Forge & Machine Company, Detroit, Mich. Booklet. Contains a few views of the plant that give some idea of the firm's equipment for turning out drop forgings for all purposes, crank shafts of all sizes and styles, special forgings of any quality of material and for any purpose up to 1 ton, cold chisels, and special tools.

Steam Turbines.—B. F. Sturtevant Company, Hyde Park, Mass. Bulletin No. 176. Deals with the Sturtevant steam turbine, an illustrated description of which was printed in *The Iron Age* October 31, 1907. The bulletin contains a discussion of the advantages of turbine engines in general and the Sturtevant steam turbine particularly, and this introduction is followed by a more or less illustrated detailed description of its construction. Tables of dimensions for turbine blowers, turbo-generating sets and belted turbines are appended.

Storage Batteries.—Edison Storage Battery Company, Orange, N. J. Booklet; size, 8 x 10½ in.; 52 pages. Describes and illustrates the construction and uses of the new type A Edison storage battery. The illustrations include the parts of the battery, steps in its manufacture and some of the commercial vehicles to which it has been applied.

Bearing Metals.—Empire Metal Company, Syracuse, N. Y. Pamphlet. An exceedingly interesting discourse on bearing metals. The work is so cleverly done that the man who reads the first few lines will not be likely to lay the pamphlet aside until he reaches the last word.

Automatic Water Gauge.—The Ohio Blower Company, Cleveland, Ohio. Mailing card. Concerns the Swartwout automatic safety water gauge which was illustrated and described in *The Iron Age* March 31, 1910. This gauge practically eliminates the danger of injury to either the attendant or the boiler when a gauge glass breaks, by the instant closing of two automatic valves which cut off the flow of water and steam.

Pumps and Supplies.—Henion & Hubbell, 61 North Jefferson street, Chicago, Ill. Catalogue No. 22; size 5½ x 7½ in.; pages 681. Illustrates and describes iron and brass pumps for operation by hand or any kind of power, hydraulic machinery, steam engines and boilers, tubular well tools and supplies, pipe and fittings, heating and plumbing supplies, brass goods, engine trimmings, hose, belting and mining and mill supplies. The descriptions are concise but cover the essential points, and nearly all are illustrated.

Safety Valves.—The Crosby Steam Gauge & Valve Company, Boston, Mass. Eleven circulars. List standard valves for stationary and marine boilers, yacht pop safety valves, gun metal valves for portable or farm engine service, standard and Underwriter water relief valves, and the Johnstone blow-off valves.

Pipe Threading Supplies.—The Armstrong Mfg. Company, Bridgeport, Conn. Pamphlet. Calls attention to the Armstrong line of pipe threading stocks and dies and water, gas and steam fitters' tools. Space is also given to the company's new pipe threading and cutting-off machines, which are operated either by hand or power and will cut off and thread pipe from ¼ to 6 in. inclusive.

Steam Specialties.—James P. Marsh & Co., 2224 Washington street, Chicago, Ill. Catalogue. Deals with the Marsh line of gauges, valves and steam specialties. The gauges illustrated include models for a number of different uses both with and without illuminated dials. The valves shown include a thermostatic valve, water pipe line relief air valve and an automatic air and vacuum valve.

Feed Water Heater.—Harrison Safety Boiler Works, North Philadelphia Station, Philadelphia, Pa. Booklet. Gives general description and specifications for the Cochrane improved steam-stack and cut-out valve heater and receiver. The principal advantage claimed is reduced expense of equipping any system of exhaust steam heating by saving the cost of an independent separator in a by-pass around the heater to the system and the cost of the trap, valves and fittings required for its installation. Several types of the new heater are illustrated, some of which are adapted for the very limited headroom of basement boiler rooms. Illustrated descriptions of these heaters appeared in *The Iron Age* June 10, 1909, and March 3, 1910.

Boilers.—Kewanee Boiler Company, Kewanee, Ill. Catalogue No. 50. This is the company's 1910 catalogue, describing and illustrating a line of horizontal tubular boilers, rocking and shaking grates, portable locomotive boilers, vertical tubular boilers, portable return tubular boilers, air receivers, and feed water heaters and boiler feed pumps. Diagrams showing the efficiencies of the different styles of riveted boiler joints and tables showing the weights of iron and steel sheets and the circumference and areas of circles are included.

Valves and Packing.—Jenkins Brothers, 71 John street, New York City. Revised edition of the 1907 catalogue and price-list; size 6 x 9 in.; pages 138. Illustrates and describes the Jenkins line of valves and packing, which includes angle, cross, globe, check, swing check, blow-off, radiator and safety valves; rubber disks, packing, gaskets and pump valves; the Mason reducing valves, elevator pump pressure regulator, balanced valves, and steam pump speed governor; and a number of piping supplies. The dimensions of the various models of valves are given in tabular form and a complete index is appended.

Pipe Specialties.—Walworth Mfg. Company, 128 Federal street, Boston, Mass. Pamphlet. Shows the different kinds of piping specialties handled by this company. Among these are valves of various types, radiators, steam traps, hydrants, iron pipe from ⅛ to 12 in. in diameter, and tools for cutting, reaming and threading pipe.

Tools and Supplies.—Samuel Harris & Co., 114 North Clinton street, Chicago, Ill. Catalogue; size 3¾ x 5½ in.; pages 511. Relates to a line of machinists' and manufacturers' supplies and tools for various industries. The lines illustrated include practically everything from small machine screws and rivets up to the machines on which they are made.

Governors and Reducing Valves.—The Fisher Governor Company, Marshalltown, Iowa. Booklet. Explains the operation of the various types of Fisher governors. These include the regular model in both angle and globe patterns for pressures ranging from 10 to 500 lb., a medium high pressure model designed to carry hydraulic pressures of from 500 to 1500 lb., and a high pressure governor for use where the pressures range from 1500 to 8000 lb. Other models include a special governor for supplying oil to the step of a vertical steam turbine, a diaphragm governor, a gravity governor for use on pumps discharging into open elevated tanks, a combination governor to control a pump supplying both an open tank or standpipe and a high pressure fire line, a vacuum governor and an electric governor for use with motor driven pumps. Space is also given to the regular and increased outlet styles of reducing valves, which are made in either the angle or globe pattern.

Machinists', Railroad and Mill Supplies.—Joseph H. Whitehead Company, 12 North Jefferson street, Chicago, Ill. Catalogue; size 4½ x 7 in.; pages 427. Covers principally such small supplies as chucks, drills, pliers, cutters, bits, bolts and nuts, and files. Some portable machinery, such as punches and shears, bench emery grinders, small drills and forges are included. Shovels, wheelbarrows and other contractors' tools are shown, as well as engineers' wrenches and vises. Most of the supplies are tabulated in sizes and an extensive index completes the catalogue.

Tiering Machinery.—Economy Engineering Company, Chicago, Ill. Loose leaf bulletins. Concerned with the Economy electric tiering machine for handling wood pulp, bales of waste paper, barrels and all sorts of heavy or bulky merchandise. These machines are really portable elevators which are capable of being moved from place to place around the factory and lifting bundles or cases whose weight does not exceed 1000 lb. The principal advantage claimed aside from the economy of handling goods in this way is an increased storage capacity for the same floor space over piling goods by hand.

Vertical Turret Lathe.—The Bullard Machine Tool Company, Broad street and Railroad avenue, Bridgeport, Conn. Pamphlet entitled "The Vertical Turret Lathe for Machining Automobile and Gas Engine Parts." Refers to its use for machining such parts as flywheels, brake drums, sprockets, &c. A number of illustrations show the different operations performed on this machine.

Oil Filters, Exhaust Heads and Ventilators.—Burt Mfg. Company, Akron, Ohio. Catalogue; size 6 x 9 in.; pages 111. Treats very fully of the American, the Cross and the Warden oil filters, the Burt oil filtering system, the Burt and Standard exhaust heads and the Burt combination skylight and ventilator. Considerable space is given to the construction and operation of the company's various products. A number of illustrations show plants where these goods have been installed, and lists of users are appended. *The Iron Age*, September 9, 1909, contained an illustrated description of an installation of the Burt unit oil filters at the plant of the Indiana Steel Company, Gary, Ind.

The Triumph Electric & Ice Machine Company's New Plant

Opening of the Part Now Completed

April 30 the Triumph Electric & Ice Machine Company celebrated the opening of the recently completed portion of its plant at Oakley, Cincinnati, Ohio, and its twenty-first anniversary, as it was organized in May, 1889. A special train took the guests to the plant, and upon their arrival luncheon was served, after which speeches were made by James J. Heekin, president of the Cincinnati Chamber of Commerce; A. J. Conroy, president of the Business Men's Club; S. P. Egan of the Cincinnati Industrial Bureau; W. F. Robertson, president of the Manufacturers' Club; R. K. Le Blond of the Metal Trades Association, and J. S. Louis, sales manager of the company. An inspection of the plant followed and demonstrations were made of new and special machinery recently installed.

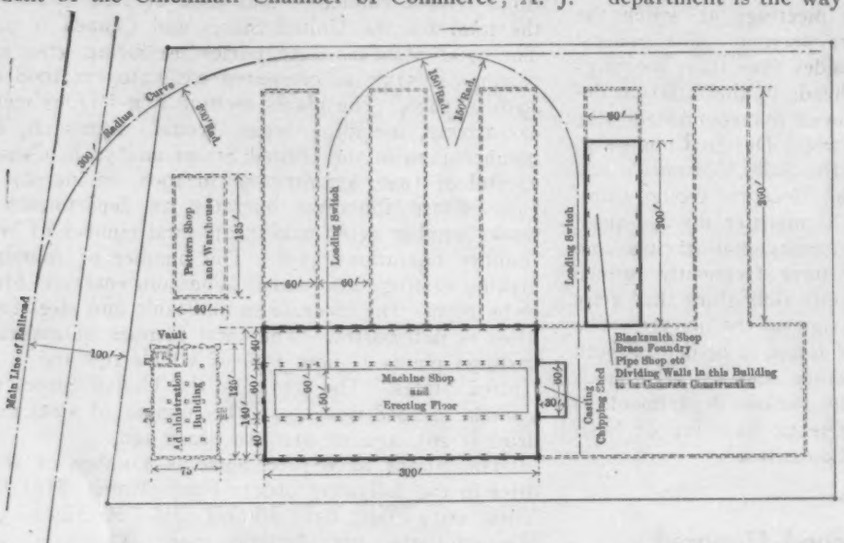


Fig. 1.—General Plan of the New Plant of the Triumph Electric & Ice Machine Company, Oakley (Cincinnati), Ohio.

Fig. 1 shows the general plan of the plant as it will appear when entirely completed, and Fig. 2 a cross section through the shop. At present the only buildings erected are those shown by solid lines, which are the main factory, 140 x 300 ft., three stories high, and the blacksmith shop, 60 x 200 ft. The main building has an erecting floor in the center 60 ft. wide, which is open to the roof, and served by a 20-ton traveling crane with a 5-ton auxiliary hoist. Eventually the main building will be extended to a length of 800 ft., with ells measuring 60 x 240 ft., and a clear space of 60 ft. between. The buildings have steel frames, are faced with red brick and have saw tooth roofs. Ample railroad facilities are provided.

Raw material will be received at one end of the factory and the finished product shipped from the other end.

The main floor extends the length of the building and as far as the main columns on either side, covering approximately 48,000 sq. ft. The large planers, boring mills and radial drills for both departments are located in this section, and the whole floor is served by a 15-ton motor-driven Box crane, with a 5-ton auxiliary hoist. The testing department is located in one end of the main building in close proximity to the outgoing railroad switch. For convenience in anchoring machines under test, the floor here is built up of Z-bars and concrete, reinforced with railroad rails.

The platen floor department, containing all the heavy portable tools, adjoins the heavy tool department, so that work may be easily transferred from one to the other. Here the practice is followed of bringing the tools to the work rather than to mount large and unwieldy pieces on permanently placed machine tools. The casting chipping shed is just outside the main building and adjoining it, and is equipped with pneumatic tools and sand blast apparatus. The small apparatus testing department is at present on the first floor of the east bay, which also contains the punch department, the assembling department and the present office building.

Among the novel features developed in the punch department is the way of cleaning the laminations for electrical machinery. Instead of removing the oil which collects on the punchings by gasoline, the punch dies are lubricated with lard oil, which is removed from the work by dipping it in a solution of boiling potash, which has an affinity for lard oil. The iron is cleaned more effectively and quickly, and the laminations are then plunged into another tank of clean boiling water, rinsed and then quickly dried. Tests have shown that the potash produced no deleterious effect on the iron.

A feature of the new plant is that each department while being entirely separate is not totally inclosed; the divisions will be indicated by brass railings 3 ft. high around the various departments.

Taking the routing of the work through the shops in the order of production, one comes, first, to the assembling department, immediately adjoining the punch

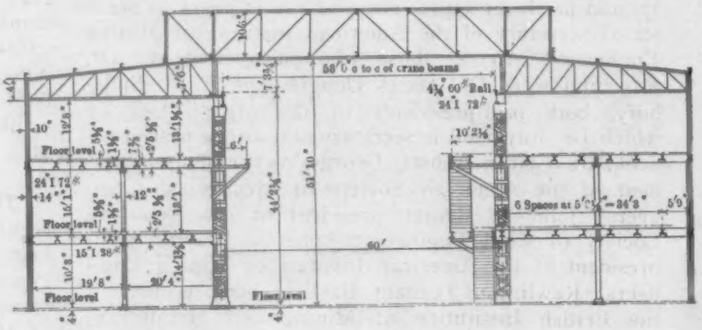


Fig. 2.—Sectional Elevation Through the Machine and Erecting Shop.

department, where the laminations are assembled into cores, and are then ready to be transferred either to the stores immediately above the second floor as a semifinished product, or to the armature winding department immediately above on the third floor. All three floors are served at this point by an elevator, and in addition the third floor is also served by the overhead traveling crane. The switchboard department is located on the third floor above the stores, as are also the commutator and coil winding departments; the raw material for each of these sections being contained in the stores below. The temporary shop office, the tool room and the lathe department, where all refrigerating machinery work is performed and employees' dining room are located on the first floor of the west bay. The wash rooms for the use of the men are also located in this section.

Light, heat, water and compressed air are supplied

to the Triumph as well as the other large companies comprising the Oakley group by the Factory Power Company. It is equipped with 300-kw. Triumph generators, directly connected to Hamilton-Corliss cross-compound engines. Power and light cables are run underground to the point of distribution, as is also the hot water for heating the various buildings, and compressed air at 90 lb. pressure for driving pneumatic tools. Water at 100 lb. pressure is supplied to a system of automatic sprinklers throughout this as well as the other buildings in the group.

The Triumph Company is prominent in employees' welfare work. It maintains a dining room, where meals are served at cost, and what is probably more important, each week holds meetings at which the heads of all departments are present. The general manager of the company presides over these meetings and minutes are kept. The heads of the different departments are members of one of five committees; the General Committee, the Electrical Design Committee, the Ice Machine Committee, the Sales Committee and the Foremen's Committee. The Electrical Design Committee and the Ice Machine Committee discuss questions of design in relation to costs, manufacture and sale, and their deliberations have frequently proved valuable in eliminating the petty difficulties that arise in placing a new article or design on the market. The Sales Committee meetings are found to be helpful both to the salesmen and the factory officials. The uniformly smooth working of the various departments is attributed largely to the systematic handling of business through the Foremen's Committee.

Dr. R. W. Raymond Honored

Some 400 eminent scientists and personal friends, including representatives of many foreign technical societies, gathered at a dinner at the Hotel Plaza, New York City, on Saturday evening, April 30, which was partly in celebration of the birthday of Dr. Rossiter Worthington Raymond, who was 70 years old April 27, and partly in appreciation of his 30 years of service as secretary of the American Institute of Mining Engineers. Among those who paid tribute to Dr. Raymond were Dr. James Douglas and E. G. Spilsbury, both past-presidents of the organization of which Dr. Raymond is secretary and also a past-president; Dr. Lyman Abbott; George Westinghouse, president of the American Society of Mechanical Engineers; John A. Bensel, president of the American Society of Civil Engineers; James C. Bayles, past-president of the American Institute of Mining Engineers; Rawlinson Tennant Bayliss, vice-president of the British Institution of Mining and Metallurgy; Sorzano de Tajada of the Société des Ingénieurs Civils de France; John Fritz; Frank Dawson Adams, president of the Canadian Mining Institute; Geo. W. Maynard; Robert W. Hunt; Thomas Commerford Martin, past-president of the American Institute of Electrical Engineers, and William Lawrence Saunders, president of the Ingersoll-Rand Company.

A gold medal from the Institution of Mining and Metallurgy was presented to Dr. Raymond by Mr. Bayliss, and Dr. Douglas presented two handsomely illuminated parchments from the Iron and Steel Institute and the Vereinsdeutscher Eisenhüttenleute. After the reading of resolutions passed by the British Institution of Mining and Metallurgy and Société des Ingénieurs Civils de France by their respective representatives, Dr. Raymond spoke, and as he took his seat at the conclusion of his remarks, a large floral mound, built up to suggest a Western mine with the buildings, smelters and workmen's homes, was parted and disclosed a silver service, which was presented to the guest of honor and his wife.

The Foundry Industry of the United States and Canada

A census of the foundry industry of the United States and Canada made by the *Foundry* shows a total of 6594 foundries on April 1, 1910, against 6366 in 1908, a net increase of 228. A similar census in 1906 showed 6108, so that the net increase in four years is 486. In compiling the figures each plant was regarded as a unit, though there might be several departments. Counting each foundry department as a unit—there being many cases where gray iron and brass foundries are operated by one company, sometimes with a connected malleable or steel foundry—the total for the United States and Canada is 9158. The total number of foundries producing gray iron castings is 5157, as compared with 5105 in 1908 and 4956 in 1906. The plants melting non-ferrous metals exclusively, including brass, bronze, aluminum, &c., number 1170 in the United States and 70 in Canada, a total of 1240, against 1096 in 1908, an increase of 144. Brass foundries operated as departments of works number 2318, making the total number of brass foundry operations 3558. The number of foundries making castings into which aluminum enters is found to be 1679. The increase in malleable and steel foundries is noteworthy. The total number of malleable castings plants is now 178, of which 168 are in the United States. The total for the United States and Canada in 1908 was 153. The number of steel foundries is 265, against 211 two years ago.

The States have precedence in number of foundries in the following order: Pennsylvania, 851; New York, 661; Ohio, 631; Illinois, 455; Michigan, 335; Massachusetts, 273; Indiana, 251; Wisconsin, 250; New Jersey, 249. Among the Southern States Alabama leads with 97 foundries, while Tennessee has 90; Georgia and Virginia, 86 each; Texas, 77; Kentucky and Maryland, 63 each; Louisiana, 45, and Mississippi, 22. The 10 leading foundry centers of the country are as follows, with the number of foundries in each: Chicago, 174; New York, 148; Philadelphia, 122; Pittsburgh, 93; Detroit, 93; Cleveland, 92; Cincinnati, 76; Milwaukee, 67; St. Louis, 63; Buffalo, 61. Chicago shows a gain of 43 foundries in two years; New York, 30; Philadelphia, 3; Pittsburgh, 10; Detroit and Cleveland, 11 each; Cincinnati, 6, and Milwaukee, 9. St. Louis shows a loss of 6 and Buffalo of 3.

The Pittsburgh Foundrymen's Association.—The regular monthly meeting of this organization was held in its new quarters in the auditorium of the Engineers' Society, on the twenty-fifth floor of the Henry W. Oliver Building, Pittsburgh, on the evening of May 2. The paper of the evening was by S. S. Knight, general manager of the Chester Steel Castings Company, Chester, Pa., on "Steel Castings." F. H. Zimmers, secretary of the association, is arranging to take a large party of Pittsburgh foundrymen to the convention of the American Foundrymen's Association in Detroit in June.

The Lackawanna Steel Company, Buffalo, N. Y., has completed the enlargement and remodeling of its bar mill and the installation of additional machinery, including tie-plate mill machinery, all of which is now practically ready for operation. A 750-hp. tandem compound Hamilton-Corliss engine has been installed for driving the machinery of the bar mill and tie plate mill.

The New York Air Brake Company, whose head offices are at 165 Broadway, New York, has sold to the International Harvester Company its gas engine business and plant in Moscow, Russia. The Air Brake Company retains its brake business in Russia.

Premium Systems*

A General Discussion of Such Systems as Applied to Machine Shops

BY CARL G. BARTH

No particular mode of paying workmen can alone remove the distrust and misunderstanding between employers and their employees. What is needed is co-operation between them. As often as they together accomplish a substantial task the workman should be given in addition to his regular wages a fair share of the extra profits. Further co-operation means that the employer examine into everything that must be attended to before the employee can actually devote himself to the job for which he is especially fitted and hired. Often he is compelled to do many things that are foreign to his job proper. Perhaps he is wasting time getting material, drawings or tools, or there is something the matter with his machine, or the work is not that for which it is best suited. Even a first-class mechanic may not know enough about the art of cutting metals to select the most economical feed and speed for his work.

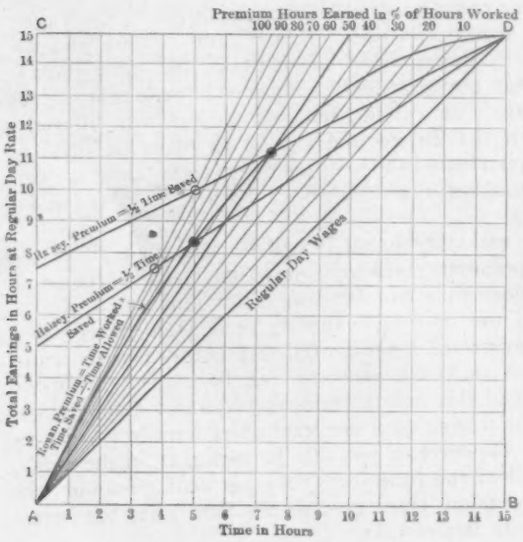

Premium Hours Earned in % of Hours Worked
100 90 80 70 60 50 40 30 20 10
Total Earnings in Hours at Regular Day Rate
Time in Hours
Regular Day Wages
Halsey Premium = ⅓ Time Saved
Halsey Premium = ½ Time Saved
Rowan Premium = Time Worked × Time Saved ÷ Time Allowed

Fig. 1.—Graphical Comparison of the Earnings from Various Premium Systems for a Job Allowed 15 Hours.

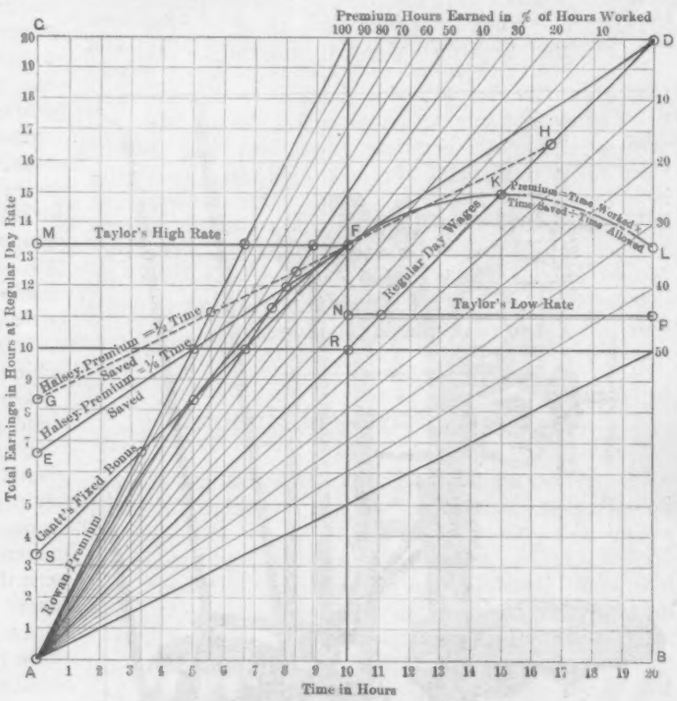

Premium Hours Earned in % of Hours Worked
100 90 80 70 60 50 40 30 20 10
Total Earnings in Hours at Regular Day Rate
Time in Hours
Taylor's High Rate
Taylor's Low Rate
Regular Day Wages
Halsey Premium = ⅓ Time Saved
Halsey Premium = ½ Time Saved
Gantt's Fixed Bonus
Rowan Premium
Premium = Time Worked × Time Saved ÷ Time Allowed

Fig. 2.—Graphical Comparison of Premium Plans and Co-operative Task Plans with 10 Hours as the Task Time.

There is no end to the things that are part of the business of a manager to look after carefully and systematically, to get the most out of machines and their attendants, and make the latter feel that their comfort and ease of mind are considered.

Under existing conditions, determining the time for doing a piece of work is haphazard and uncertain. No end of records of what this time has been can be a real indication of what it should be, and hence no system or plan for paying a man for his job which has such records for its basis can constitute a satisfactory contract between employer and employees. The worst part of such contracts, whether in the form of piece rates or premium time allowances of one kind or another, is that almost invariably the employer stands ready to force the employee to accept readjustments of them, when he, either through exceptional good luck or by extraordinary efforts, has succeeded in doing a little too well. Nor is the matter materially improved by any such ingenious automatic premium regulating plan as that first invented by Mr. Rowan of England.

Comparison of Premium Systems

It may be of interest to compare the original Halsey premium plan and the modification made of this by Mr. Rowan, as just referred to. In the diagram, Fig. 1, the Halsey plan is represented both with a premium equal to one-third of the time saving effected, as favored by Mr. Halsey himself, and with a premium of one-half of this time, as favored by other champions of this plan. The diagram is made out for a job with a time allowance of 15 hours, and shows all the theoretically possible earnings on all three premium plans referred to, the day wage portion of these and the percentage that the premiums bear to the latter.

It will be seen that the premium for reducing the time allowance to 10 hours, or by one-third, amounts to 3 1-3 hours by the Rowan plan, 2½ hours by the Halsey plan, with the premium of one-half the time saved, and to 1 2-3 hours by the Halsey plan with the premium of one-third. Also, that in percentage of the time actually worked, these various premiums amount respectively to 33 1-3, 25 and 16 2-3 per cent. It will further be seen that, when the time is reduced to 7½ hours, the Halsey premium of one-half the time saved is exactly the same as the Rowan premium; and also that this premium, which amounts to 3¾ hours, or 50 per cent. of the time actually worked, is the maximum absolute premium that can be earned on the Rowan plan. When the time is reduced to 5 hours, the Halsey premium of one-third the time saved is the same as the Rowan premium, and it will be seen that it amounts to 3 1-3 hours, or 66 2-3 per cent., of the time actually worked.

This diagram makes it apparent that the Rowan plan cannot be very successful in inducing a workman to reveal the time in which he can do a piece of work when the time allowance is excessive; for it is then so easy for him to earn a substantial increase over his day wages by but moderate exertions that the slightly higher relative increase that further exertions would net him will not appear to be worth his while. Of course a workman may not discover this at first, but experience soon teaches him to view it in its true light, *i. e.*, as an ingenious plan to induce him, without adequate remuneration, to disclose the real time required for the execution of a piece of work about which the management has shown its complete ignorance.

Compared with this scheme either of the original Halsey plans provides a more moderate premium where only moderate exertions are required to materially reduce the time allowance; but one which increases at a

* From an address before the National Metal Trades Association, New York, April 14, 1910.

sufficiently high rate with increasing time reduction to constitute a real incentive for a man to take advantage of it, provided he has not reason to fear that the handsome premium thereby earned will induce the manager to reduce the time allowance for the job.

Premium and Co-operative Task Plans Compared

Having briefly reviewed the application of the two principal premium plans to a job for which the management has guessed, by aid of previous records or otherwise, that 15 hours would constitute a proper time allowance, let us now also see how these may be applied, the same as Taylor's differential piece rate system and Gantt's bonus system, to work done under a management that thoroughly co-operates with its employees, and which, because of this co-operation, is able to set a task time limit on a piece of work, such that if this co-operation results in the work being done within this time limit, the workman receives his share of the good results obtained in the form of a substantial bonus or premium. Such an application of these premium plans, together with their comparison with the two co-

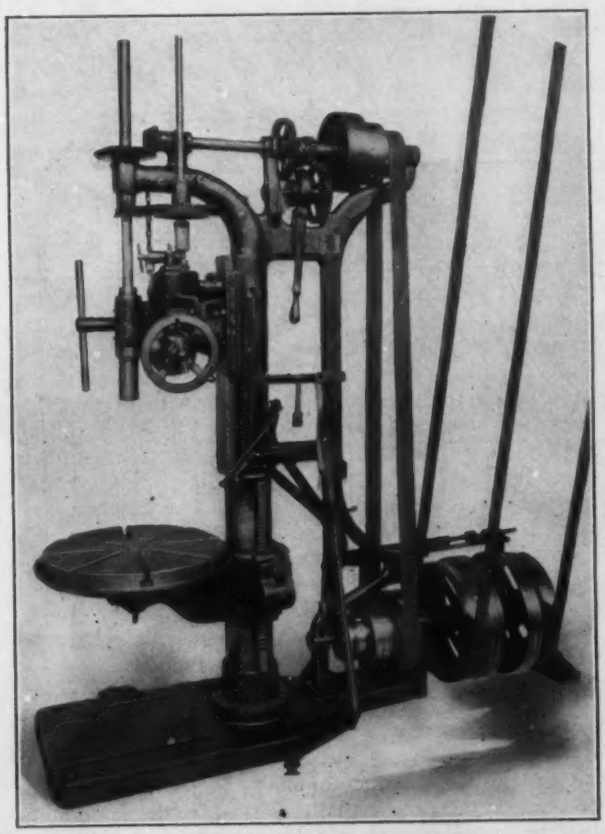


Fig. 3.—An Old Drill Press Modified to Standardize Its Operation with More Modern Types.

operative task plans, is exhibited in the diagram, Fig. 2.

This diagram is made for a job for which 10 hours of work is known to the management to constitute a task for which a premium or bonus of 1-3 or 33 1-3 per cent., over and above regular day wages is a sufficient prospective reward for the workman to induce him to work hard and earnestly to accomplish his part of this task, with the possibility of his even doing somewhat better. Taking this time of 10 hours and this premium of 33 1-3 per cent. as a basis for figuring, we find the total time allowance necessary for the Halsey premium plan with a premium of one-third the time saved, to be 20 hours; for the same plan with a premium of one-half the time saved, to be 16 2-3 hours; and for the Rowan plan, with a premium equal to the time actually worked multiplied by the time saved and divided by the time allowed, to be 15 hours; for

$$\frac{20\text{ hr.} - 10\text{ hr.}}{3} = \frac{16\tfrac{2}{3}\text{ hr.} - 10\text{ hr.}}{2} = \frac{10\text{ hr.} \times (15 - 10)}{15} = 3\tfrac{1}{3}\text{ hr.}$$

or the premium to be established for 10 hours' work on all three plans, all as clearly brought out in the diagram.

The Taylor differential piece rate system is represented in the diagram by the lines M F N P, for which the time limit for the high rate of pay for the job under consideration is the same 10 hours for which we have made the premium 3 1-3 hours, or a total high rate equal to the man's wages for 13 1-3 hours. The low rate of pay is here taken as 5-6 of the high rate, and it will be seen that the workman may be about 11 per cent. behind the time limit for the high rate before the low rate will amount to only his day wages; but also that, by further falling behind, he runs the risk of earning a substantial negative premium. Thus, for instance, if he should spend 15 hours on the job, or as much as the full time allowance on the Rowan premium plan, his earnings would be more than 25 per cent. below his day wages. Gantt's bonus plan is represented by the lines S F R D.

It will be seen that, while Taylor's plan offers a greater inducement than any of the three premium plans to reduce even the task time of 10 hours, Gantt's plan does not offer so much, and it is rather interesting to note that Halsey's premium plan, when the premium is made one-half of the time saved, in this particular respect exactly splits the difference between the Taylor and Gantt task plans; while Gantt's bonus and the Rowan premium offer substantially the same inducement for any practically conceivable reduction of the task time. It will be seen that the greatest difference between the Taylor and the Gantt plans is, that the latter guarantees the man his day wages, while the former penalizes him even severely when he runs too far behind.

On the other hand, it will be seen that all of the three premium plans considered enable a workman to earn more than his day wages for only small efforts, even if the time allowance is such as to demand the performance of a substantial task before a premium of as much as 33 1-3 per cent. can be earned, whiie the amount of this defect varies considerably among them, with the Rowan plan the least objectionable in this respect. However, it will also be seen that, in the neighborhood of the time for 33 1-3 per cent. premium, the three premium plans give results that differ but immaterially in this respect.

A Proposed Modification

To overcome the defect of the premium plans when applied in connection with task work, as tacitly suggested by presenting them as in the diagram under consideration, all that is necessary is to demand a certain amount of time saving before the premium figured will be allowed. Thus, if we wish to go to the extreme and pay no premium unless the work is performed inside the 10 hours, we only add to the various rules that the premium figured by the mathematical part of the same will not be allowed unless the time saving amounts respectively to one-half on the Halsey plan with premium of one-third the saving, two-fifths on the same plan with premium of one-half the saving and one-third on the Rowan plan.

The Halsey premium plan, with premium one-half the time saved applied in this manner, would seem to have the following advantages when compared with all the plans considered: The premium earned when the time saving for any reason is enough to reduce the time below that set as the task, while greater than the fixed Gantt bonus, is not so great as the Taylor high rate, and thus meets the idea of the manager who insists that the greater the premium earned by the man the less should be even the flat labor cost to the employer. It is mathematically the simplest of the three premium plans considered, and while not so simple as the Gantt bonus plan is sufficiently so not to be mathematically objectionable. Like the rest of the premium plans and in common with the Gantt bonus plan, it guarantees a workman his day rate, a perhaps negative virtue, but

still one insisted on both by most managers and workmen. It offers apparently the easiest way of gradually training a day worker up to the performance of a substantial task, for, while the eventual task demanded would be a saving of two-fifths of the full time from which the premium is calculated, this may be demanded by gradual steps only, as, for instance, one-tenth, one-fifth, three-tenths, and, finally, two-fifths, *i. e.*, demanding that one-tenth more of the full time be saved every time the job is repeated, until the final task time has been reached.

Perfecting Job Time Allowances

The particular manner in which a workman's reward for accomplishing his task is figured is only of secondary importance. The important matter is to abandon the old way of guessing at the time it takes to do a piece of work and earnestly set to work to obtain scientific methods for the determination of the best time in which work can be done, and on the strength of this set ourselves and our employees a definite task to accomplish each day, as so strenuously recommended by Mr. Taylor.

One of the greatest difficulties that all of the various schemes considered have had to contend with may, for lack of a better term, be called the unevenness of the machine equipment in most shops. To take a simple example, I found one shop with eight drill presses, of which only three had the same feeds and speeds; and still, rates made for any one of them were unhesitatingly applied to the rest. So, also, a number of gear cutting machines, lathes &c. This equipment was gradually unified by changes in both feeds and speeds of the majority of the machines in any one class, so as to make them all practically the same as the few already near enough alike.

Fig. 3 shows one of the drill presses thus changed, the changes consisting in one new set of back gears, new cone pulleys and a double set of speeds to the counter cone pulley, and finally a completely new feed box secured from the manufacturer of one drill press already equipped with it. The speeds and feeds of all eight drill presses were thus made practically alike, except that the two largest have one speed slower than the rest, and also a uniformly coarser set of feeds, though this is such as to agree quite closely with the smaller drill presses within a certain field. I look upon such unification of the machines in a shop as the first step toward deriving peace of mind from any mode of paying workmen.

National Founders' Association

The Administrative Council of the National Founders' Association met in New York Wednesday, April 27, to consider a number of matters which have come up since the convention of the association in New York last November. The meeting was attended by President O. P. Briggs, Minneapolis, Minn.; Vice-President Charles M. Jarvis, American Hardware Corporation, New Britain, Conn.; Commissioner A. E. McClintock, Chicago; Secretary F. W. Hutchings, Detroit, and the following members of the council: F. D. Wanning, Birmingham Iron Foundry, Derby, Conn.; F. J. Lanigan, Davis Foundry Company, Lawrence, Mass.; H. D. Miles, Buffalo Foundry & Machine Company, Buffalo, N. Y.; G. H. Johnson, Isaac G. Johnson & Co., Spuyten Duyvil, N. Y.; J. H. Schwacke, William Sellers & Co., Inc., Philadelphia; Charles J. Mesta, Mesta Machine Company, Pittsburgh; Omar N. Steele, American Shipbuilding Company, Cleveland; F. C. Caldwell, H. W. Caldwell & Sons Company, Chicago; Otto H. Falk, Falk Company, Milwaukee, Wis.; S. H. Chapman, Ontario Wind Engine & Plow Company, Ltd., Toronto, Ont.; J. L. Milne, Allis-Chalmers-Bullock, Ltd., Montreal; G. T. Thayer, South Side Foundry & Machine Works, Charleston, W. Va.

The Foundrymen's Conventions

Recent meetings of the local Committee on Arrangements for the foundrymen's conventions, to be held at Detroit June 6 to 10, indicate that thorough preparations are being made for the sessions devoted to papers, for the entertainment of members and guests and for the exhibit of foundry appliances and machinery conducted by the Foundry and Manufacturers' Supply Association. The matter of plant visitation is receiving special attention. The committee in charge of this will have headquarters at the Fair Grounds, where the exhibition and the business and other sessions will be held, and also at the Hotal Pontchartrain. One or two of the largest plants in Detroit may be visited by a large body of the foundrymen, but the usual plan will be to have the visitors go in groups of 10 to 20. In connection with the boat ride on Wednesday the coke operations of the Solvay Process Company and the blast furnace of the Detroit Iron & Steel Company on Zug Island will be visited. An innovation in connection with the Detroit convention is the appointment of a Sessions Committee, which is expected to arrange for the opening of the discussion on each paper. The person to lead the discussion in each case will be selected after conference with the writer of the paper.

Among papers to be read which are already in the hands of Secretary Moldenke are the following: "Foundry Efficiency," by Benjamin D. Fuller, foundry superintendent Westinghouse Electric & Mfg. Company, Cleveland; "The Personal Equation in Accidents," by Thomas D. West, West Steel Casting Company, Cleveland; "The Shockless Jarring Machine," by Wilfred Lewis, Tabor Mfg. Company, Philadelphia; "Chemical Standards for Iron Castings," report of the committee appointed at the Cincinnati convention, by Prof. John J. Porter, University of Cincinnati. Among papers promised are the following: "Augotenous Welding of Castings," by Steelman Stephenson, Detroit; "The Electric Furnace," by H. M. Lane, editor *Castings*, Cleveland; "Overhead Tramrail Systems for the Foundry," by A. W. Moyer, J. W. Paxson Company, Philadelphia; "The Permanent Mold," by Edgar A. Custer, Philadelphia. Paul Kreuzpointner, Altoona, Pa., chairman of the association's Committee on Industrial Education, will make a progress report. Dr. Moldenke will submit "Proposed Foundry Coke Specifications," with the object of drawing out discussion. The American Society for Testing Materials has a committee on this subject, some of the members of which are members of the American Foundrymen's Association. Papers are also expected on questions related to the steel foundry and to coremaking.

For the sessions of the American Brass Founders' Association the following papers have been announced: "Costs and Cost Systems Applied," by C. R. Stevenson, New York; "Analysis for Lead in Brass Alloys," by C. P. Karr, Nathan Mfg. Company, New York; "Co-operative Course of Metallurgy," by Prof. J. J. Porter, Cincinnati; "Electric Furnaces for Melting Nonferrous Alloys," by A. L. Marsh, Hoskins Mfg. Company, Detroit; "Fluxes as Applied to the Brass Foundry," by Erwin S. Sperry, Bridgeport, Conn.; "Electric Power as Applied to the Melting of Brass, Bronze, &c.," by Prof. J. W. Richards, South Bethlehem, Pa.; "Magnesium for Deoxidizing Aluminum Alloys," by H. M. Lane, Cleveland. Dr. F. T. F. Stephenson, Detroit, and Jesse L. Jones, Westinghouse Mfg. Company, East Pittsburgh, will also read papers.

The Foundry and Manufacturers' Supply Association announces that over 30,000 ft. of floor space has already been asked for the Detroit convention. At Cincinnati last year the exhibits occupied about 17,000 ft.

of floor space. It has been decided to use a tent for a temporary addition to the exhibiting space. It will be 30 ft. wide and whatever length may be necessary. A timber partition will be built down the center of the tent, thus making a back wall for each exhibit.

The Chemist in the Brass Foundry*

BY W. M. CORSE.

The statement has been made that the twentieth century is going to be the era of the chemical engineer, as the nineteenth century was that of the mechanical engineer. More and more of our manufacturers are coming to see that the underlying principles of their processes are chemical and that a knowledge of these principles is essential to the conduct of their business, if it is to be run at a profit. The brass manufacturers have begun to see this condition and the number of testing laboratories installed in connection with this industry are proof of this fact.

I have had the good fortune to install four chemical laboratories, three of which have been in connection with brass foundries. The first came into being because of the trouble the manufacturer was having with metal melted in oil furnaces. The furnaces did not use a crucible and the flame came in direct contact with the metal. Oxidation was greater than in the old style crucible coke furnace, and the composition of the mixture was varied to such an extent that very bad results were obtained from the castings when they were subjected to hydraulic pressure. My first work was to ascertain the amount of this oxidation and volatilization in order to maintain the composition of the resulting alloy uniform. Numerous tests were made and it was found that 35 per cent. more zinc was lost than was allowed for. It was also found that all the remelt was put into one general pile, and as this amounted to 50 per cent. of the melt, the indiscriminate use of this remelt changed the formula very materially. One thing led to another, until finally all formulas for metal were made up in the laboratory and the resulting melts were analyzed regularly to see if these formulas gave the desired result. This all may seem very simple and undoubtedly is, but the fact is that the majority of brass founders are in ignorance of just these principles of their daily operation. The last seven years have witnessed remarkable strides along such lines as described.

Many times I have been asked the question, "Of what use is a chemist to a brass foundry?" To-day the number of analyses made is probably 500 times as many as five years ago. Although the manufacturer may not have come to the point of using the chemist, he is generally willing to concede his value.

Possible Savings on Alloys

From testing the furnace products for formulas I worked to examine the raw materials for purity. These include copper, tin, lead, zinc, ingot brass, scrap brass and sometimes antimony. Aluminum also comes in prominently for some kinds of work and has to be tested. The majority of aluminum casting makers buy their alloys ready made, as it were, so that less work is done on their component parts than on finished alloys.

The cost of an alloy is, of course, determined by the cost of its components, and when these vary quite widely in price a variation in composition sometimes means the difference between profit and loss. For instance, take copper at 14 cents per pound and zinc and lead at an average of 5 cents per pound. An alloy figured for 70 per cent. copper, but actually carrying about 72 per cent., will cost 18 cents per 100 lb. more than it should. On a weekly melt of 100,000 lb. this means $180 a week, or $9360 a year. This is by no means an unusual instance, and goes to show what a very small saving per pound may mean. It also shows how the exact control of a formula may save money for the manufacturer. It is safe to assert that over a thousand pairs of metals have never been alloyed, and many times this number of combinations of three or more metals have never even been thought of. The surface of this enormous field has scarcely been scratched and offers as much promise for investigation as any that I know.

A Varied Field for Testing

In addition to the metallurgy, we have the various refractory materials and their connection with furnace design and upkeep. They comprise firebrick, fireclay, firesand and carborundum. The various molding sands come in for attention, too. These should be tested for fineness, binding qualities, resistance to hot metal, porosity, &c. Core sands are tested for fineness and refractory qualities. Crucibles are an important item of expense and should be tested regularly to insure maintaining uniform quality.

Coke can be tested for ash and sulphur, although a practical test for burning qualities is generally the most important. If oil is used for fuel it also comes into the laboratory for test.

All brass foundries have copper bearing refuse of various kinds, which cannot be worked up satisfactorily with the equipment generally available. In order to sell these for anything like their proper value it is necessary to know either their metallic contents or their copper contents, which again makes work for the chemist. As a general thing experimental work cannot be properly taken care of by the foreman. The nature of his duties prevents him from giving concentrated attention to any problem for any great length of time, inasmuch as continued interruptions render impossible the proper recording of his observations. The chemist is, therefore, the logical man to conduct this kind of work. It usually happens that the chemist is the only technical man around the foundry, so that it properly falls to his lot to record the results of all tests made, whether they are chemical, physical or practical tests of material. He often can be of help in devising production records, loss reports and summaries of such things as pounds produced per man per day, fuel consumed per 100 lb. of metal melted. He can do the planning for engineering work such as is commonly required in a foundry and can aid in the solving of such engineering problems as may arise.

I think I have made it sufficiently clear how a chemist can be used to advantage in any brass foundry large enough to warrant the outlay for a laboratory. For smaller foundries the commercial testing laboratory is available and does very satisfactory work along some lines. Experience has shown me that many foundries would employ their own metallurgist, as the brass foundry chemist may properly be called, did they but realize the many uses to which his services could be put. In my position as secretary of the American Brass Founders' Association I have had exceptional opportunities to watch the development of the brass foundry laboratory, and I have observed that the manufacturers who are making the highest quality of goods in a businesslike manner are foremost in utilizing this department. Could the practical foundryman be made to realize that a technical man makes his own position more valuable and that co-operation vastly increases his own usefulness, a great step forward would be taken in this ancient and intensely interesting industry.

* Read at the March meeting of the Chicago section of the American Chemical Society. The author is secretary of the American Brass Founders' Association.

A Continuous Billet Mill

IMPORTANT ADDITION TO THE CAMBRIA STEEL COMPANY'S PLANT

Elevated Roller Run for Conveying Steel from the Blooming Mill—Power Cycle for Rolling a 7 x 8-In. Bloom Into 1¾-In. Billets

The Cambria Steel Company, Johnstown, Pa., recently put in operation an 18-in. continuous billet and sheet bar mill, the construction of which presented several problems, owing to the fact that previously existing plant crowded the available ground and that railroad tracks imposed definite limitations. The plan finally developed was to take the steel as bloomed on the existing blooming mills and without reheating roll it into billets or tin bars down to the lightest weights. The only site available was one which made it necessary to take the hot blooms from the blooming mills, elevate them to a hight sufficient to pass over a pair of standard gauge tracks and several narrow gauge tracks without obstructing traffic and, after passing them over the tracks, drop them again to ground level at the new mill. The equipment necessary to do this, having a capacity equal to that of the mill, which is estimated at 2000 tons every 24 hours, is somewhat extensive and represents an investment almost as great as the mill itself. The character of this equipment is shown on the accompanying plan and cross sections, Figs. 1 to 5, and by means of half-tone views, Figs. 6 to 10.

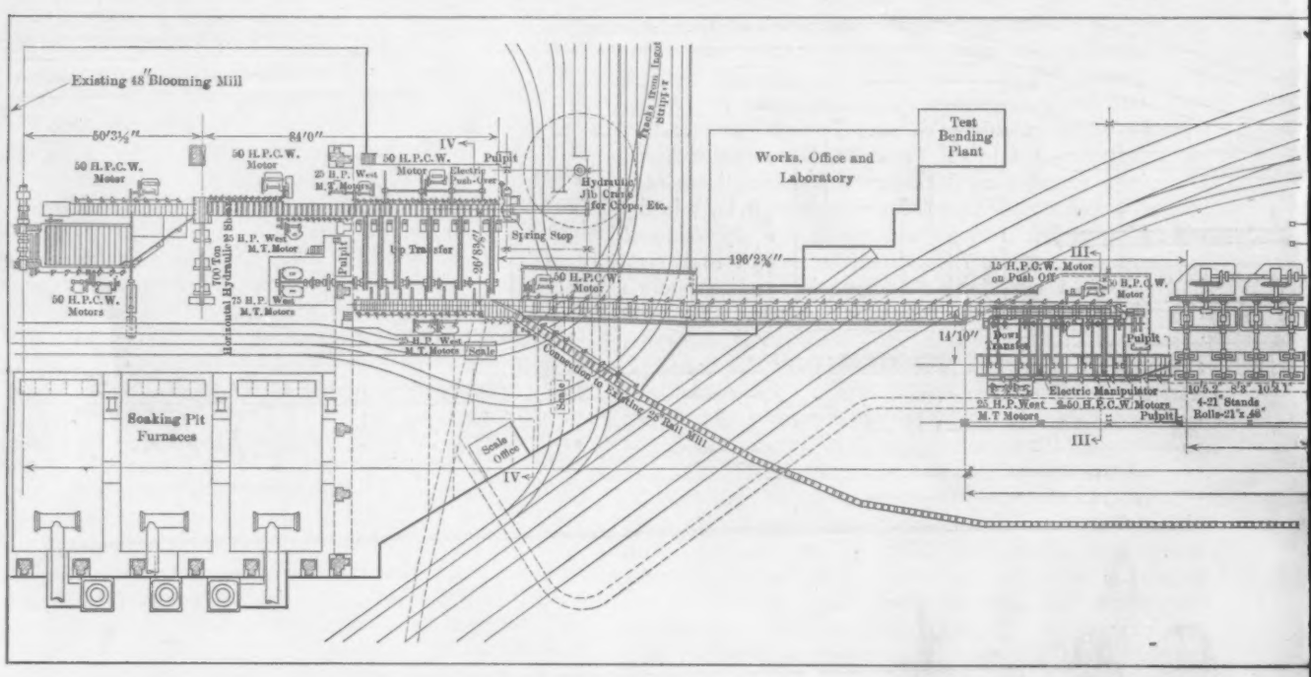


Fig. 1.—Plan of 18-In. Continuous Billet Mill of the Cambria Steel Company,

The steel rolled into single length blooms from 7000-lb. ingots is elevated by means of a sprocket chain elevator, Figs. 2 and 7, to a massive roller run which transports it across the tracks. When on this roller run the blooms may be transported either to the new continuous mill or, by means of an overhead run branching from the first one, to the 28-in. rail mill, as shown in Figs. 1 and 6. Going to the continuous mill they traverse about 200 ft. of the roller run, at the end of which the blooms are pushed transversely on a second chain transfer which lowers them to the level of the mill.

The pusher, Figs. 3 and 8, is of novel design. It consists essentially of a light crane bridge, electrically driven, running on tracks suspended from the roof structure at a hight of about 7 ft. above the roller run. The bridge structure has five pairs of dependent arms, to the inner faces of which, at the lower ends, are attached continuous guard plates. When the pusher is in position over the runway these guard plates form the guides for the roller run. When the bridge is set in motion the bloom is swept laterally from the runway to the chain transfer. The control for the bridge motor is automatic, in that when the pusher is set in motion it travels a predetermined distance and returns promptly to the original position.

The transfer on which the blooms are lowered to the mill level, Fig. 8, is also novel. Five dogs are suitably mounted in inclined ways. These dogs are counterweighted by weights suspended behind the ways, hanging on sprocket chains which pass over sprocket wheels on a torsion shaft at the top of the incline. When the bloom is pushed on the dogs its weight causes it to descend to the lower level, where the dogs descend into pockets and the bloom slides on curved guides to the entering table at the mill. The bloom lying on the entering table is turned or placed in position to enter the mill by an electrically driven "grasshopper" manipulator.

The entire transfer apparatus will be covered, in order to retain as far as practicable the initial heat of the bloom. The speed of this apparatus is such that about 80 seconds elapse from the time the bloom leaves the cropping shear at the blooming mill until it is ready to enter the continuous mill.

Elevated Transfer for Blooms

Continuous Mill

This mill was designed by the Morgan Construction Company, Worcester, Mass., and was built by the

United Engineering & Foundry Company, Pittsburgh. It is designed to take blooms 8 x 8 in. in section, weighing 7000 lb., and reduce them to 1¾-in. billets in one series of passes or to 2-in. billets in another series. It is also designed to take 7 x 7 in. blooms, weighing 7000 lb., and reduce them to tin bars of any commercial weight. The grooves of the mill are so designed that billets of the following sizes may be taken from the mill without changing passes: 1¾ in., 2 in., 2¼ in., 2½ in., 3 in., 3½ in., 3⅞ in. and 5 in.

The mill is intended primarily to roll tin bars 8 in. wide, with a range of weights from 7½ lb to 40 lb. per foot. Tin bars from 6 in. in width to 15 in. in width may be rolled on it by changing the rolls, as the flying shear, delivery rollers, bar piler, &c., are designed to take bars up to the maximum width stated.

There are 12 stands of rolls driven by gearing from a single engine. The first four stands have rolls 21 in. in diameter, and these four stands serve as roughing rolls for either billets or tin bars. The remaining eight stands have rolls 18 in. in diameter. For billets the

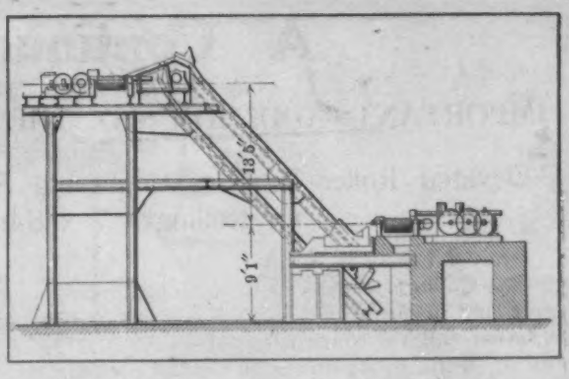
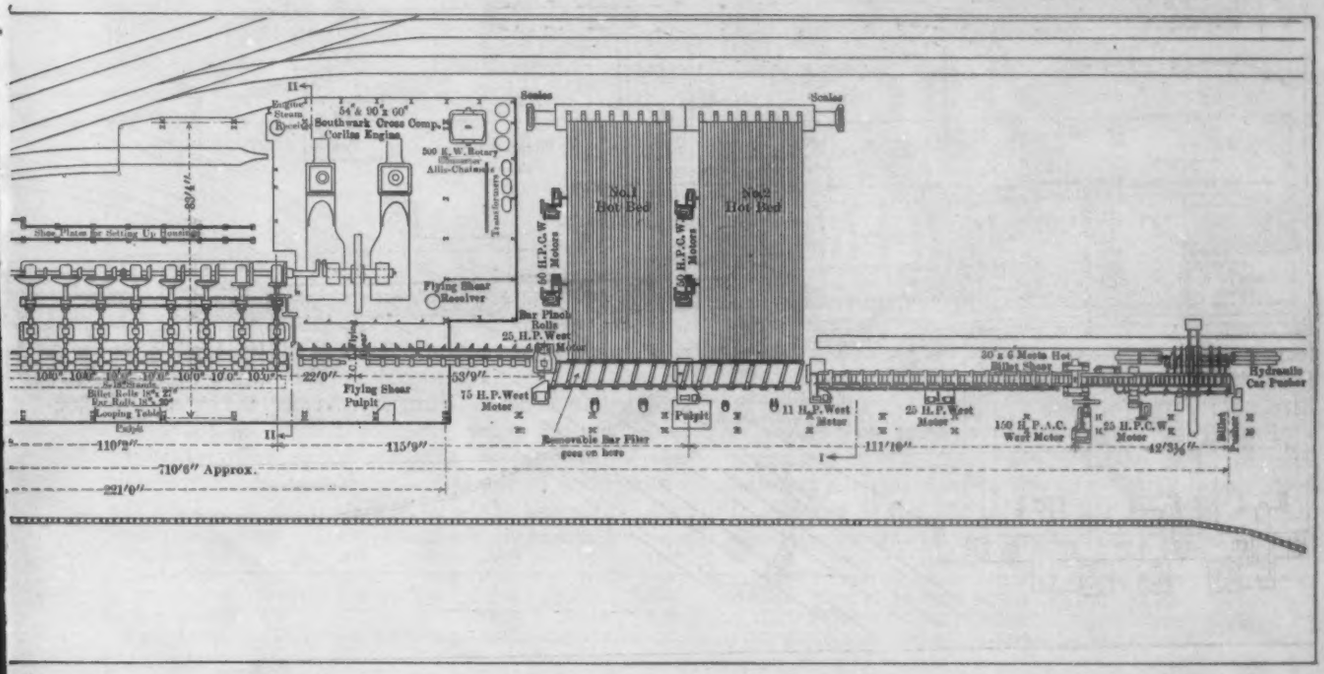


Fig. 2.—Up Transfer, Section IV-IV on Plan.

area at average rolling temperatures. The value employed in the following tables was 12,000 ft. lb. per 100 lb. stock per 1 per cent. reduction. After the gear ratios, speeds and reductions of the successive passes were finally selected, Table I, which shows the deter-



with Overhead Roller Run for the Transfer of Steel from the Blooming Mill.

rolls are 27 in. long, while for tin bars they are 20 in. long. The shoes are so designed that the mill can readily be set for either length of roll, and to facilitate quick changing the tin bar rolls are kept set up in an extra set of housings, ready to set in the shoes. For rolling tin bars the mill is equipped with the usual looping tables of Morgan Construction Company design. In addition to rolling the standard product as above outlined, it is felt that this mill can be made to roll various sizes of merchant bar. Just what can be done in this line must necessarily be the result of experiment. The mill has been laid out with more space between stands than is usually the case, with this idea in view.

The flying shear is one of the largest the Morgan Construction Company builds and has a capacity up to and including a section 3¼ in. square. It is actuated by an electrically operated tripping device, which is working very successfully, and the exhaust from the shear is fitted with a muffle which almost entirely eliminates the noise usually associated with these shears.

Power Cycle for Continuous Mill

The selection of the size of engine to drive this mill was made after a careful study of the mill requirements, based on tests conducted on rolling similar sections on other mills. A value was determined for the work required to reduce 100 lb. of steel 1 per cent. in mining factors of the engine power required, was prepared. The power cycle on continuous mills can be much more definitely determined than on strand mills

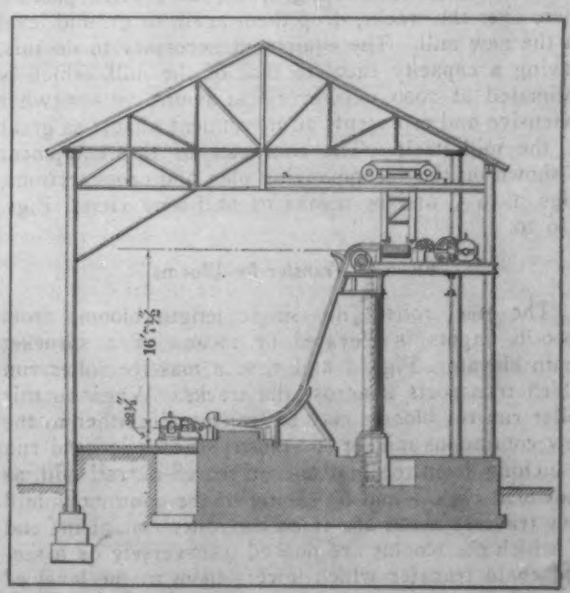


Fig. 3.—Down Transfer, Section III-III on Plan.

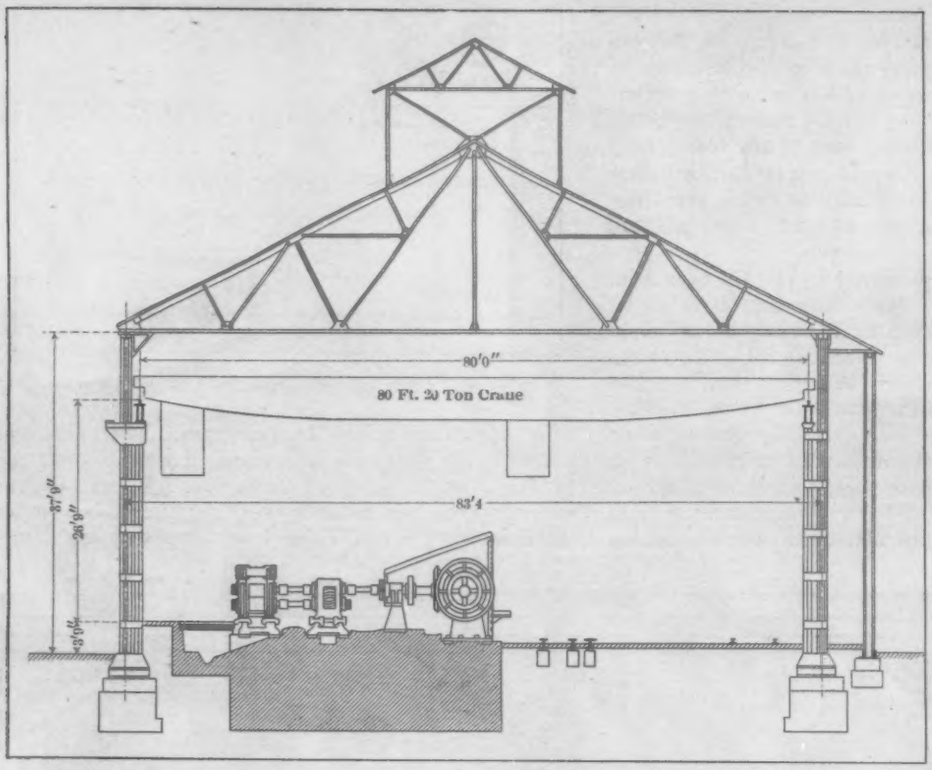


Fig. 4.—Section II-II on Plan, Showing 18-In. Mill and Building.

because, in the first place, the material, owing to inherent features of continuous rolling, stays in each pass the same length of time, and secondly, because the intervals of time between passes are definitely known from the delivery speeds of each pass and the distance between successive rolls.

From Table I was plotted the power cycle shown in Fig. A. The straight lines shown above the power cycle represent the intervals of time that the material stays in each roll, and knowing the power required at the mill coupling for each pass at its respective speeds from Table I, a diagram which represents the power cycle can be readily plotted. Fig. A shows the work of rolling one bloom, whereas if one bloom were allowed to follow the other as soon as the first groove was ready to take it, a power diagram such as shown in Fig. B would be the result. The characteristics of this load very plainly show that a large flywheel would be of no benefit, because the load on the engine, unlike the usual mill loads, is of a very uniform character, making it necessary for the engine cylinders to be capable of developing the maximum torque. It was therefore necessary to procure an engine capable of developing continuously 5000 hp.

The Engine

Owing to plant conditions the engine had to be designed for a comparatively low steam pressure and with the possibility of occasionally running noncondensing. A 54 and 90 x 60 in. cross compound Corliss engine was finally selected as most suitable for the work. The contract for the engine was let to the Southwark Foundry & Machine Company, Philadelphia. This engine is of an especially stout construction. It is a two-bearing engine, having a 28 x 52 in. main bearing, carrying a shaft with 75-ton wheel. On one end of the shaft is a disk crank; on the other a solid forged steel Kennedy crank having a crank pin 26 in. in diameter and 16 in. long. The crossheads are deep, with removable wrist pins. The guides are flat, providing for large crosshead shoe surfaces. The valve gear is of exceptionally strong design, all levers being double, with no overhanging pins, insuring perfect alignment and freedom from binding. The high pressure valve gear is actuated by the single eccentric and, unlike common Corliss movements, has an extended cut-off under governor control up to 80 per cent. by an ingenious auxiliary system of levers, which are operated by the lateral movement of the eccentric rod. At the end of the wrist plate travel the valves are positivly closed, if the dash pots for any reason may have failed to close them. In this way the advantages of the single eccentric engine are combined with those of the extended cut-off type, making safe operation compatible with economic cylinder proportions. Cast steel umbrella shaped pistons are carried on hollow nickel steel through rods so supported that they are carried free of the cylinder walls. A novel feature was embodied in the exhaust steam line leading to the central Weiss counter current condenser, serving a group of mill engines. The exhaust line from this engine had to be of necessity 40 in. in diameter to carry the large quantities of low pressure steam from this engine at full load. It was not thought necessary, however, to install a valve of full pipe section, and accordingly con and diverging nozzles were placed on either side of a 24-in. valve for the dual purpose of facilitating operation and cheapening first cost.

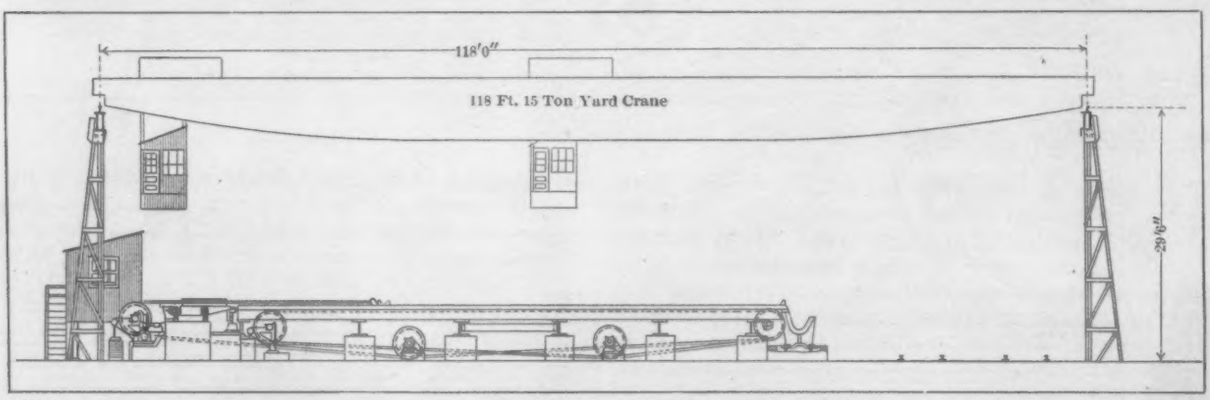


Fig. 5.—Section Showing Hot Beds and Loading Tracks.

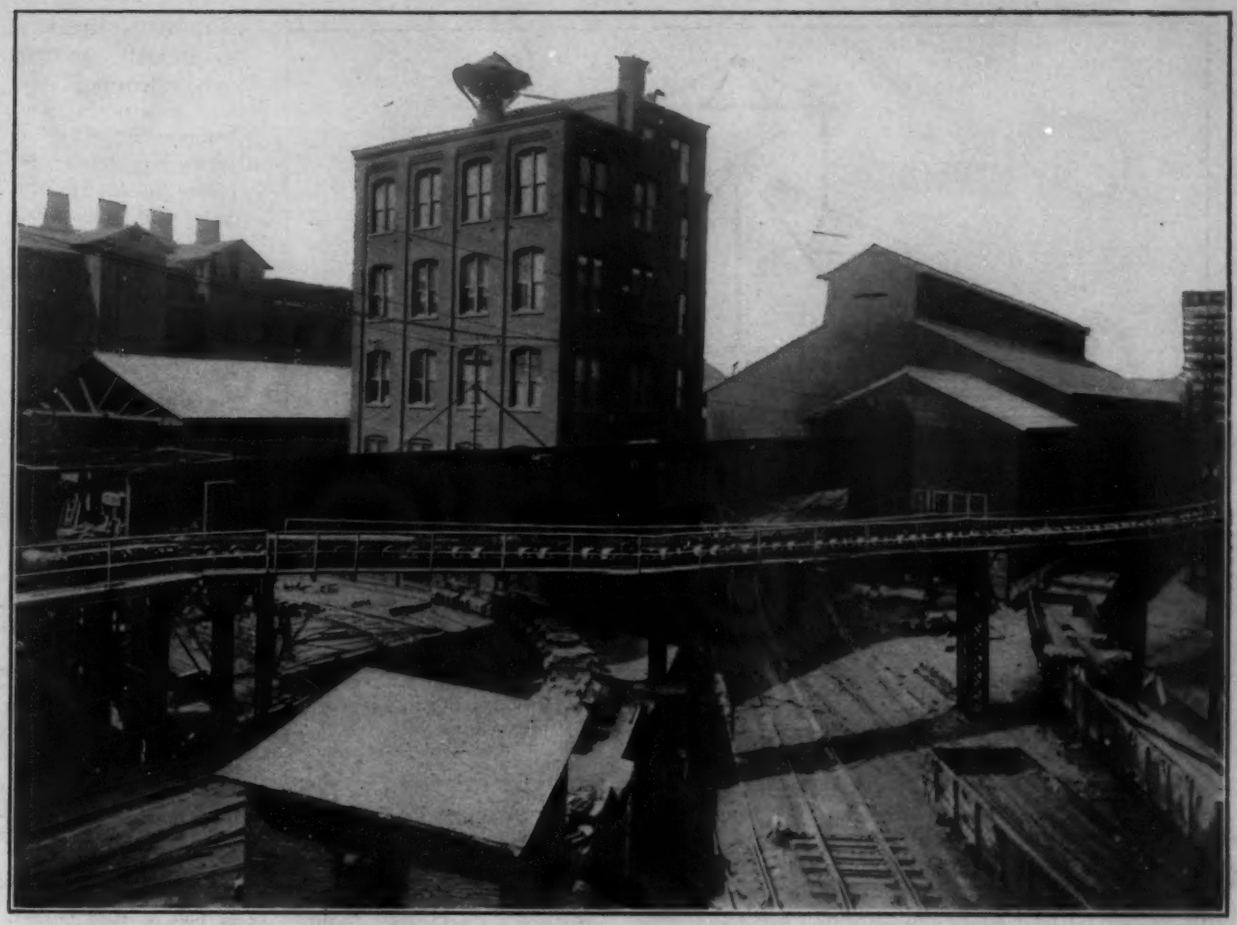


Fig. 6.—General View of Elevated Roller Runs to Continuous Billet Mill and Rail Mill.

Table No. 1.—Details of Passes in Continuous Mill, Based on Power Requirement of 12,000 Ft.-Lb. Per 100 Lb. Steel Per 1 Per Cent. Reduction.

No. of stand.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Reduction, per cent.	23.2	32.8	22.0	26.6	22.9	17.3	19.0	12.3	20.0	15.8	26.7	17.5
Area (sq. in.).....	43.0	28.9	22.55	16.55	12.75	10.55	8.55	7.50	6.0	5.05	3.70	3.05
Elongation	1.303	1.488	1.282	1.362	1.297	1.209	1.234	1.140	1.250	1.187	1.364	1.222
Length (feet).....	47.8	71.5	91.0	124.0	161.0	195	240	274	342	407	556	674
Rev. per min.....	5.46	8.2	10.4	14.2	18.4	22.4	27.5	31.4	39.2	46.6	63.6	77.2
Time in rolls.....	100	100	100	100	100	100	100	100	100	100	100	100
Del. sp'd (ft. p. m.).	28.6	42.9	54.6	74.4	96.5	117	144	164.5	205	244	333	404
Foot-lb. (1 = 1000)	19,500	27,550	1,850	22,350	19,250	14,540	15,970	10,330	16,800	13,280	22,420	14,700
Horsepower	355	500	336	406	350	265	290	188	306	241	408	267
Gear ratio.....	1-14.14	1-9.42	1-7.57	1-5.44	1-4.2	1-3.45	1-2.81	1-2.46	1-1.97	1-1.66	1-1.215	1-1

The engine is equipped with a complete return oiling system and centrifugal filters. To guard against possible runaway of such a large engine when running on friction load, an automatic overspeed tripping device operating a quick closing value is installed.

Cooling Beds

Inasmuch as the mill is designed to roll both billets and tin bars, the cooling beds are required to be adapted to handle either product. To handle tin bar required construction very much heavier than the usual billet

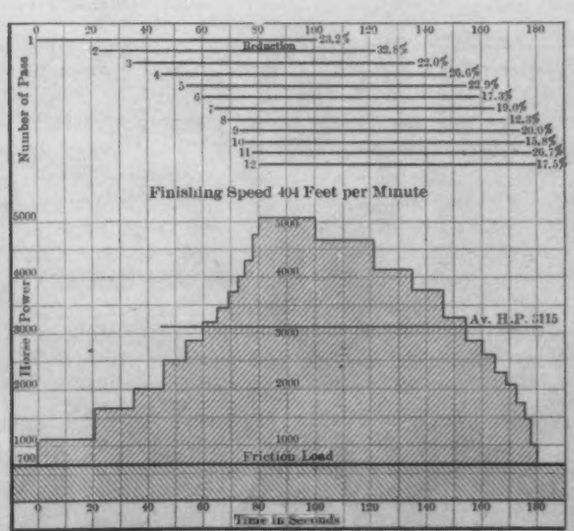


Fig. A.—Diagram of Power During Cycle of Rolling 7 x 8 In. Blooms to Billets 1¾ x 1¾ In. in 12 Passes.

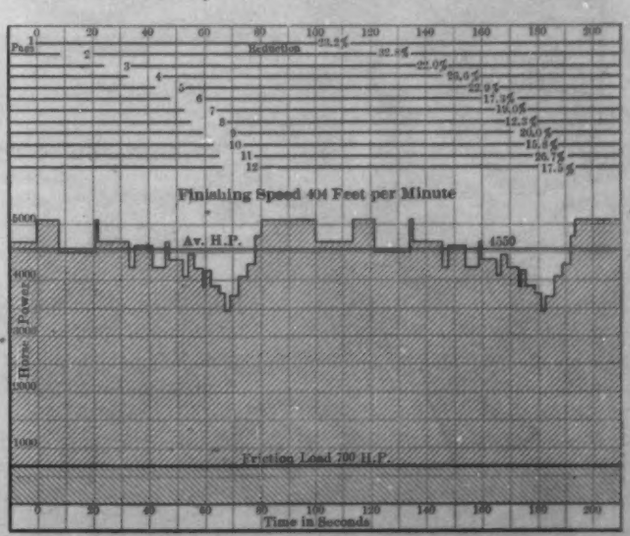


Fig. B.—Diagram of Power When Rolling 7 x 8 In. Blooms Weighing 7000 Lb. to Billets 1¾ x 1¾ In. in 12 Continuous Passes at 1 Min. 53 Sec. Headway, or 2400 Tons per 24 Hours.

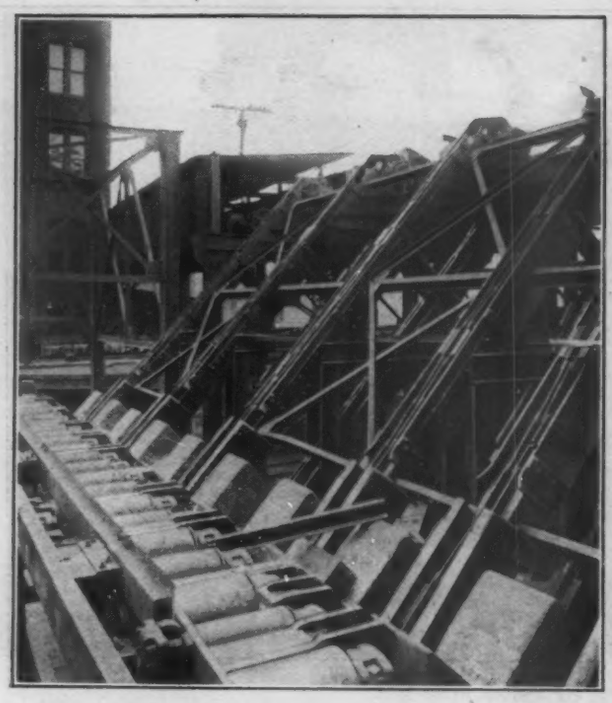


Fig. 7.—View of Up Transfer from Blooming Mill Run-Out.

cooling table, while at the same time the requirements for billets made the clearances extremely close. The problem was solved by building on heavy concrete foundations a structural steel framework of heavy beams and channels. This work was capped by longitudinal cast iron skids of sufficient section to absorb the heat from the piles of tin bar without distortion or buckling and so cored as to permit ample air circulation to keep the structural steel substructure cool. Two beds 76 ft. long are provided to take the output of the mill. Each is fitted with cradles on scales to weigh the output as made.

In order to take care of the various sizes of merchant bars and billets larger than 2 in. square, the company provided an extension to the roller table which serves the cooling beds, leading to an electrically operated Mesta Machine Company shear which has capacity to cut at one operation three bars 6 x 6 in. in section. This shear is fitted with an electrically operated gauge, so that bars of varying lengths from 18 in. to 16 ft. may be sheared. The shear is equipped with the usual balanced shear table and with a kick-off device by which the billets are pushed into crate cars running on a shuttle parallel to the roller run. The cars are pushed along this track by means of a hydraulic car pusher, and the track is long enough to permit the use of a sufficient number of cars, so that while one car is being loaded the crated billets may be removed from the others by means of the overhead crane covering the yard. The two cooling beds, together with the shear and shuttle track above mentioned and the comparatively large area of cooling yard, as well as two shipping tracks extending the full length of the yard, are covered by a 20-ton crane of 118 ft. span built by the Cleveland Crane & Engineering Company. It is equipped with a special trolley for handling tin bars and billets, and the arrangement of the yard is such that most of the work will be done by trolley movement only.

Fig. 8.—Top of Transfer on Which Blooms Are Lowered. Also Shows Push-off Crane.

Fig. 9.—Bottom of Transfer on Which Blooms Are Lowered to Level of Continuous Mill.

Located under an adjunct to the engine room is a 500-kw. rotary converter and bank of transformers, which convert the alternating current generated at the company's central power station into 220-volt direct current for use in driving the various motors for the roller runs, transfers, cooling beds, &c.

The mill was recently completed and started off very satisfactorily on 1¾-in. billets. The tin bar rolls have just been installed, and apparently the mill will work with equal success on tin bars.

British Pig Iron Profits in 1909.—As throwing light upon the conditions in the British iron trade in 1909, the annual statement of Bell Brothers, Ltd., Middlesbrough, England, is interesting. At the annual meeting this month Sir Hugh Bell said that the year had not been altogether pleasant for those engaged in pig iron manufacture. For one thing, considerable trouble had resulted from the enforcement of the

Fig. 10.—General View of Continuous Billet Mill.

statutory eight-hour day in mining operations, the act having gone into effect July 1. The profits for the year amounted to £99,495. The output of pig iron was 383,475 tons, or 25,818 tons more than in the previous year, while the output of coke was 427,708 tons, or 5244 tons less. The iron ore production was 1,048,650 tons, an increase of 11,702 tons, while that of coal was 897,797 tons, an increase of 117,469 tons. The company's supply of ore was not sufficient for its wants and 185,115 tons was bought in the market. The price realized for pig iron averaged 48s. 9½d. per ton, as compared with 50s. 9½d. per ton the previous year. The company had succeeded in reducing its costs, so that in spite of lower market prices it made £28,000 more than in the previous year.

New York's New Post Office

The new post office building for New York City, extending from Thirty-first to Thirty-third streets, with a frontage of 375 ft. on Seventh avenue and 333 ft. on Thirty-first and Thirty-third streets, just west of the new Pennsylvania Railroad station, has many interesting structural features.

The tracks leading from the two Pennsylvania tunnels under the Hudson River fan out and 22 of them pass under the building. This necessitated a special spacing of the columns to the first, or basement, floor, on the girders of which rest the building columns. The former are of two 15-in. 55-lb. channels, with 18 x ¾ in. cover plates, although those carrying exceptionally heavy loads have several cover plates reinforced with angles. The largest column has two 15-in. 55-lb. channels, with six 18 x ¾ in. cover plates (three on each side with an additional 11 x ¾ in. plate on each), a ¾-in. plate on both sides of the channel web, two 6 x 4 x $\frac{13}{16}$ in. angles on the inside cover plates, and a diaphragm consisting of an 8 x ¾ in. plate to which is riveted four 6 x 4 x $\frac{13}{16}$ in. angles connecting it to the channels. This column is designed to carry a load of 2,000,000 lb.

The columns described above support the girders for the basement floor. The girders running north and south are 9 ft. deep, spaced approximately 20 ft. apart, with varying spans, the longest being 79 ft. There are several that weigh 75 tons apiece, but the heaviest is 86 tons. This monster girder required a truck with 40 horses to haul it. The greatest end shear is estimated at 2,000,000 lb. Between the 9-ft. girders, extending east and west, are others 7 ft. 10½ in. deep for the building columns.

Twenty feet above the basement floor is the workroom for the post office employees. The workroom is a large open space 160 x 225 ft., free from any columns, the roof being supported by trusses. In the court walls are trusses 8 ft. deep, with 50-ft. span, built up of two latticed girders. Supporting the trusses are 3 x 3 ft. columns (five in the north and south walls respectively and two in the east and west walls), in which are ladders. These special trusses and columns are for inspection purposes, for from the former a complete view of the men working in the court may be obtained. An inspector can climb up unseen from the track floor through the 3 x 3 ft. columns to the trusses, through which he can walk and watch the men below.

Although the building will be only five stories high yet 9240 tons of steel were required up to the basement floor and 9000 tons above, making a total of 18,240 tons. Open hearth steel was used, which on analysis had 0.25 per cent. carbon, 0.40 per cent. manganese and 0.02 per cent. phosphorus.

McKim, Mead & White, New York, are the architects, and Gunwald Aus is the consulting engineer for the steel work, assisted by S. F. Holtzman. The Pennsylvania Steel Company is furnishing the steel for the structure up to the ground level, and has given a part of the work consisting of the heavier sections to the Eastern Steel Company. The contract has not yet been placed for the remainder of the steel.

Specifications for Nonferrous Metals

The committee of the American Society for Testing Material appointed last year to formulate standards and specifications for nonferrous metals and alloys organized recently and mapped out its work. Dr. Wm. Campbell of Columbia University, the chairman of the committee, has appointed subcommittees as follows: 1. Pure Metals in Ingot Form—W. H. Bassett, chairman; L. Addicks, F. L. Antisell, G. H. Clamer, T. D. Lynch, G. C. Stone. 2. Wrought Metals and Alloys—W. R. Webster, chairman; J. A. Capp, W. H. Bassett, N. F. Harriman, T. D. Lynch, H. E. Smith. 3. Sand Cast Metals and Alloys—T. D. Lynch, chairman; G. H. Clamer, G. L. Norris, C. R. Spare, E. S. Sperry, H. Souther. 4. White Metals with Tin, Lead or Zinc Base—G. H. Clamer, chairman; L. J. Krom, E. S. Sperry, G. W. Thompson, H. Souther, H. E. Smith.

New Farwell Molding Machines

Pneumatic Roll-Over Machines and Squeezers Made by the Adams Company

To the line of foundry molding machines built by the Adams Company, Dubuque, Iowa, there have recently been added four new machines, all of which are designed by F. O. Farwell, the company's general superintendent. These include a pneumatic roll-over molding machine, illustrated in Figs. 1 to 8, inclusive, herewith; a squeezer designed for use with Keep hinged match plates, shown in Fig. 9; a 24-in. stationary squeezer, with an improved type of table, Fig. 10, and a 34-in. portable heavy duty squeezer or plow point machine, Fig. 11.

Fig. 1 shows the Farwell pneumatic roll-over molding machine without any pattern in it. This machine

Fig. 1.—The Farwell Pneumatic Roll-Over Molding Machine Made by the Adams Company, Dubuque, Iowa.

Fig. 2.—The Roll-Over Machine with the Flask in Place Ready to Be Jolted.

jolts the mold as well as turning it over and drawing the pattern. The combination of these features in a portable machine is new. It will be noticed from the engraving that solid cast iron wheels are used, since they serve as an anvil on which the mold is jolted. These wheels run upon a track imbedded in the floor, thus affording an ample foundation at small expense and without necessitating a permanent location of the machine at one place. The angle iron arm or table resting on the wheels carries the pattern, and each side is provided with a heavy steel block, A, which receives the shock when the mold is jolted. The holes in this angle iron are for the purpose of attaching the pattern, which is clearly shown in Fig. 8.

Fig. 2 shows the flask in place, filled, ready to jolt.

Fig. 3 shows the operation of jolting, which is accomplished by alternately admitting air to the cylinder and exhausting it, both of which operations are performed with the same valve, enabling the molder to control the machine entirely with one hand. After jolting and striking off, the bottom board is placed in position and secured by the adjustable clamps which are attached to the match board.

Fig. 4 shows the next operation. The molder opens the air valve again, admitting air to the cylinder and

Fig. 3.—The Jolting Operation.

Fig. 4.—The Mold Lifted After Jolting.

Fig. 5.—The Mold Inverted Ready for the Pattern to Be Drawn.

Fig. 6.—Drawing the Pattern.

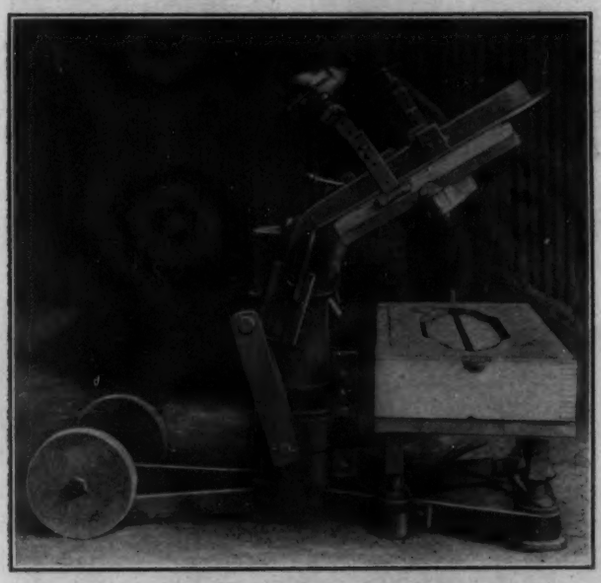


Fig. 7.—The Pattern Drawn.

Fig. 8.—The Pattern Returning for the Making of the Next Mold.

raising the mold to the dead center. After passing this point, the mold is lowered on to the cross pieces B, Fig. 1, by allowing air to escape. This can be done as quickly or as slowly as is desired.

Fig. 5 shows the mold as it has reached this position. The four plungers C, Fig. 1, are provided with springs, which automatically equalize or adjust themselves to the irregularities of the bottom board on all four points, and as soon as the mold rests upon the cross pieces B these plungers are locked in position by a single movement of the lever D, which is connected by links to all four plungers. This lever D may be kicked into locking position with the foot. The molder now releases the clamp and is ready to draw the pattern.

Fig. 6 shows the operation of drawing the pattern. The molder with his left hand operates the air valve,

Fig. 9.—The Farwell Squeezer for Use with Keep Match Plates.

which admits air to the cylinder, and with his left hand opens a pet cock, admitting air to the Adams pneumatic rapper, which is mounted on the frame work carrying the pattern. The pattern is drawn perfectly straight to any desired hight before starting to roll over, and this, combined with the pneumatic rapper and the steady air control, insures a good, clean lift. It will be seen that as cylinder E, Fig. 1, is raised by the air pressure within, the pattern will be drawn straight until the yoke F strikes the pin G, when the yoke must stop, making a fulcrum of the ping H.

Fig. 7 shows how the machine operates from this point on, the pattern describing an arc.

Fig. 8 shows the pattern as it has just passed the dead center, rolling back to its original position, ready to receive a new flask and start on another mold.

Fig. 10.—The New 24-In. Stationary Farwell Squeezer with Improved Table.

The special features of the Farwell pneumatic roll-over molding machines are its great simplicity, the method of instantly clamping the plungers, so that the mold rests evenly thereon; the elimination of expensive concrete foundations, portability, the hinged clamps, easy control and the use of the pneumatic rapper in drawing the pattern.

Fig 9 shows the new type of Farwell squeezer that has been developed for use in connection with the hinged match plate system invented by W. J. Keep, superintendent of the Michigan Stove Company, Detroit, Mich. This machine will be placed on the mar-

ket for the benefit of those who adopt the Keep system, and the Adams Company will supply the squeezers as well as special equipment required to all foundries who are licensed to use Mr. Keep's invention.

The Keep system employs hinged snap flasks and a match plate, provided with lugs which fit into the hinges of the flask, thus making it possible to roll up the cope and the pattern. To allow for this, the squeezer top is arranged so that it will swing further back and the table is provided with a special flask supporting device, not shown in this view. The flask supporting device operates two pins which support the back side of the drag when the cope is rolled up. This is necessary to prevent the drag from being tilted by the weight of the cope.

Fig. 10 illustrates the new 24-in. stationary Farwell squeezer, which is very similar in construction to other Farwell squeezers, except that the table is raised higher above the rocker shaft, and it is not necessary for the top to swing through so great an arc in clearing the table. This makes it easier to bring the top forward into squeezing position, while the new form of table brings the mold up above the links which connect the rocker shaft with the side arms, thereby making it possible to use a larger flask in proportion to the width of the machine and removing the danger of the molder striking his knuckles against these links when riddling sand. This machine, which measures 24 in. between side rods, will take a flask 18 in. long, or within 6 in. of the width of the machine, whereas on the ordinary 20-in. squeezer, which measures 30 in. between side rods, flasks longer than 22 in. are not handled conveniently.

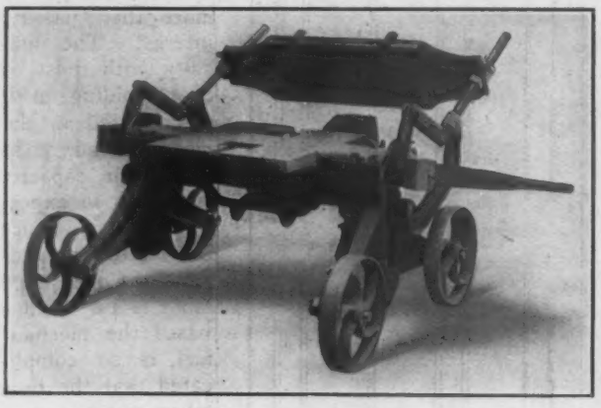


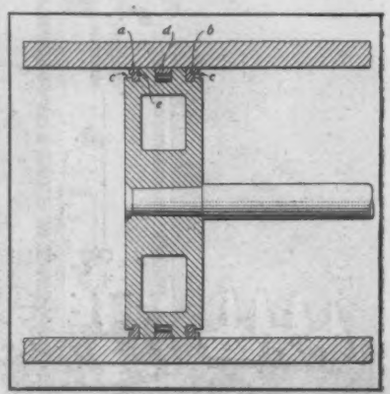
Fig. 11.—The 34-In. Portable Low-Down Heavy-Duty Farwell Squeezer.

Fig. 11 illustrates the new 34-in. portable low down heavy duty Farwell squeezer or plow point machine. This type of machine has in the past been built in 30 and 38 in. sizes only, and the 34-in. machine is a new addition to the line, possessing some special features not found on the other machines. The principal improvement on this 34-in. machine is the new style of counterbalancing spring, which is adjustable to any tension. This spring can be set so that the squeezer top comes forward of itself, but, of course, it is ordinarily adjusted so that the top stays back out of the way until the mold is ready to be squeezed, when it is brought forward by a very slight pull. The leverage of the spring is so arranged that practically no effort is required either in pushing the top back or pulling it forward.

The Rogers-Brown Iron Company, Buffalo, N. Y., has let contracts for a large portion of the construction work and equipment for its two new blast furnaces to be erected at South Buffalo. They will adjoin the two furnaces of the former Buffalo & Susquehanna Iron Company, which the Rogers-Brown Iron Company has acquired by merger. James Stewart & Co., New York and Chicago, secured the contract for the excavation and foundation work for the furnaces, stoves, cast houses, engine and boiler houses, piling timber and concrete foundation for ore docks, bins, etc. The plate work for the furnaces and stoves was taken by the Variety Iron & Steel Works Company, Cleveland; the boilers by the Babcock & Wilcox Company, New York, and the blowing engines by the William Tod Company, Youngstown, Ohio. Contracts for the ore bins and larries, pumps and electrical machinery have not yet been let, but will be shortly. Julian Kennedy, Pittsburgh, will have supervision of the engineering portion of the work.

The Kilroy Piston Ring

The Kilroy Piston Ring Company, 74 Cortlandt street, New York City, which was recently organized to take over the patents granted to M. J. Kilroy on an improved form of piston ring, has commenced manufacturing and has placed its product on the market for use on steam and internal combustion engines, pumps, and air and ammonia compressors. The advantages claimed for this ring are minimum leakage past the piston, as the rings are expanded by the pressure of the steam or gas in the cylinder; the use of a very small amount of lubricant and the developing of increased power by the engine.



Section Through an Engine Cylinder, Showing the Kilroy Piston Ring.

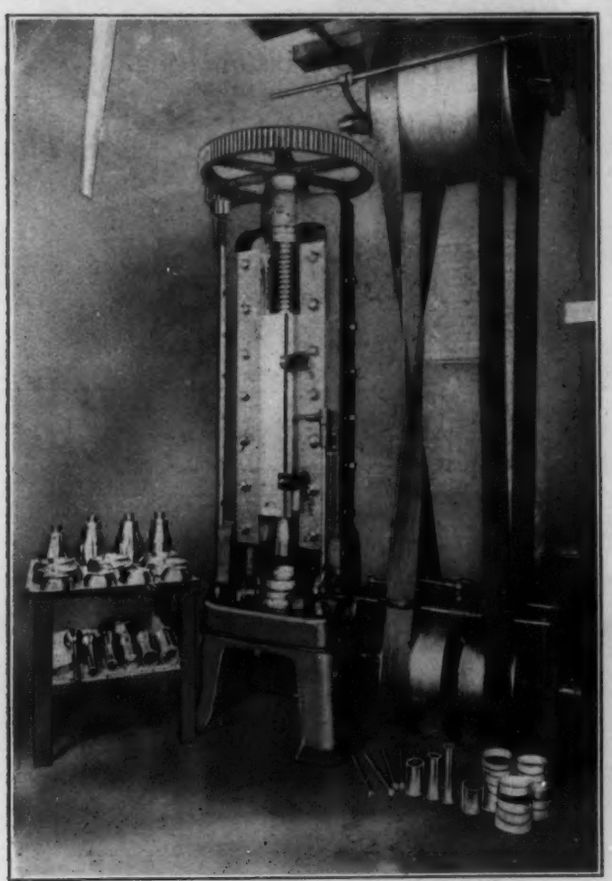
Referring to the accompanying illustration, which shows a section through the cylinder of a steam engine, the rings *a* and *b*, which are of patented construction, are snapped into grooves on the piston heads. These rings have steam gaps, *c*, and as the steam enters these gaps it expands the rings, so that they fit snugly against the cylinder. The pin *e* prevents each ring from revolving or changing its position, but allows expansion in any direction. A center ring, *d*, is pressed against the cylinder by a corrugated spring and helps carry the weight of the piston and steady its motion.

Electric motors are taking the place of steam in many manufacturing plants, but for a quick change the Gandy Belting Company, Baltimore, Md., manufacturer of Gandy stitched cotton duck belting, seems to have made a record. On a recent day its 150-hp. steam plant broke down. By noon the following day, just 24 hours later, the entire plant was again in operation. The 150 hp. is furnished by two electric motors, one of 100 and one of 50. At the time of the breakdown the 100-hp. motor was in Philadelphia, which will give some idea of the difficulties overcome.

The Frog, Switch & Mfg. Company, Carlisle, Pa., has been granted by the Treasury Department allowance of drawback on railroad frogs and switches manufactured from imported steel rails, fish plates and bolts. In liquidation the quantity of imported material taken as the basis for the allowance of drawback may equal the quantity used, as shown in the verified abstract after official verification of exported quantities, the proper allowance being made for waste according to the value thereof.

The Standard Drawing and Broaching Press

For drawing tubes in brass, gold plate, gold, silver, platinum and copper the Standard Machinery Company, 7 Beverly street, Providence, R. I., has brought out a new machine having a stroke of 24 in., which is known as the No. 2 drawing and broaching press. The special features of this machine are the possibility of securing uniform pressure on the work at all times, and drawing uniform and even stock. The accompanying illustration shows the machine with an



The No. 2 Drawing and Broaching Press Built by the Standard Machinery Company, Providence, R. I.

equipment for drawing stock from a round flat blank 7 in. in diameter and 0.08 in. thick to a 1¼-in. tube having a wall 0.045 in. thick and about 16 in. long. In addition to this work, it is also adapted for redrawing and broaching cups and tubes of heavy metal. Some of the advantages claimed for the press are the saving of time, because the stroke may be varied to suit the work being done and the use of thrust bearings to reduce the friction on both the downward and upward strokes of the ram.

The machine has a stroke of 24 in. and is capable of exerting a pressure of 55 tons. The countershaft runs at 300 rev. per min. for ordinary work. For each 12.85 revolutions of the pulley shaft a motion of 1 in. is given to the slide. The speed at which this machine operates may be varied either by means of the line shaft direct or by changing the gears on top of the machine. A quick return motion and an automatic stop are provided to vary the stroke of the ram. Mossberg roller thrust bearings are employed to take the thrust on the screw and ram on both strokes, and are said to effect a considerable saving in the power required to operate the machine. The thrust bearing on the under side of the gear is of advantage in stripping work which clings to the plunger on the up stroke of the ram. The stripper is then brought into action to clear the plunger and exerts a downward force which is overcome by these thrust bearings.

The die space is 16 x 19 x 10 in., and the diameter of the screw is 4½ in., with a 1-in. pitch. The driving pulley is 24 in. in diameter and has a 6¼-in. face, and the return pulley is 19 in. in diameter with a 5¼-face. The floor space required by the machine is 3 ft. 2 in. by 7 ft. 6 in., and the extreme hight is 9 ft. The net weight of the machine is 7500 lb.

The Ardelt Pipe Molding Machine

A German Machine Which Is Meeting With Much Favor Abroad

A recent issue of *Stahl und Eisen* presented an interesting article on the use of molding machines for making pipe. Among those described is the Ardelt patent machine, built by R. Ardelt & Döhne, Eberswalde, Germany, which is of more than passing interest. The difficulty with most of the molding machines used in the pipe foundry is that their capacity is not up to expectation, and hence they offer no advantages over hand labor. In some cases the mechanism is so complicated that the time taken to make up a mold is even greater than with the old way. Again, other machines require special flasks or are dependent upon a peculiar construction of the buildings. Finally, excessive wear and power consumption have rendered otherwise good machines unprofitable.

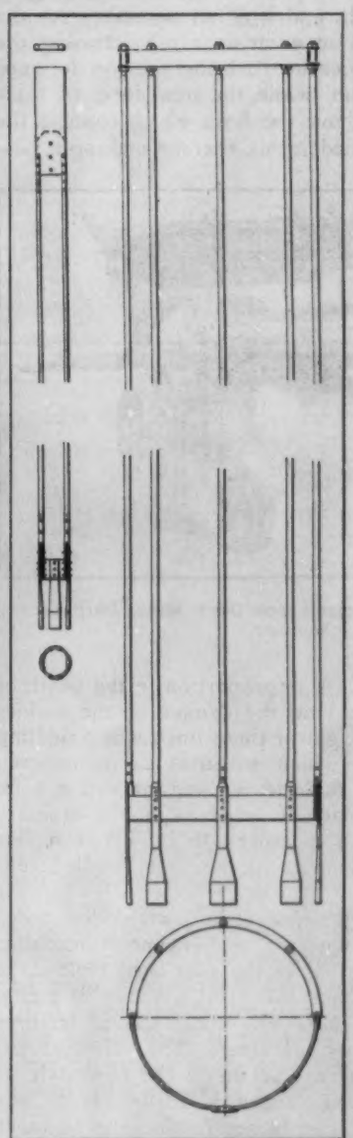


Fig. 1.—The Ardelt Ramming Device.

Ardelt & Döhne claim to have overcome all of these objections and point to the rapid introduction of their machine as a proof of this assertion. At first the workmen objected to the ramming type of molding machine and did their best to hinder a successful production. This was, however, soon remedied, and today the mechanism is given the best of care in every case, so that repairs do not exceed those of the old hand rammers. The comparatively large number of revolutions of the rammers and their peculiar design effect a very even distribution of the sand, as well as providing plenty of it to be acted upon in the descent of these tools.

Fig. 1 shows the rammer head equipped with two and eight rammers respectively. The first is for a gravity machine and the other for use when a friction

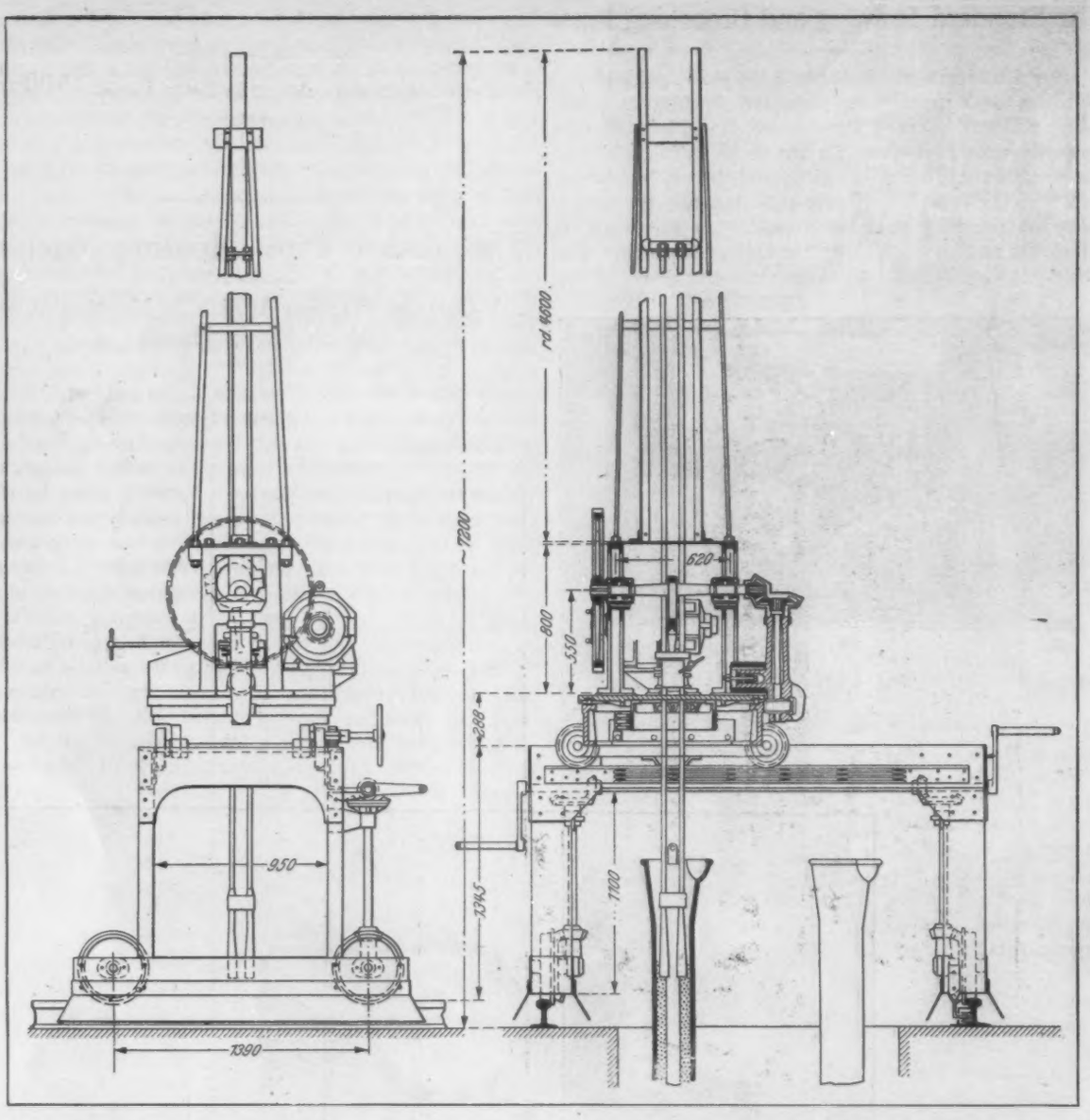


Fig. 2.—The Ardelt Portable Pipe Molding Machine. (The Measurements Are in Millimeters.)

coupling is used. Where the flasks are set up in a row the machine is placed upon a truck and thus becomes portable, as shown in Fig. 2. On the other hand, where the flasks are to be brought to the machine this is mounted on four columns. The machine can therefore be used irrespective of the methods employed in the foundry, provided, however, that the sand is not used too sparingly; otherwise the rammers must be made too light. It is not wise to use less than 1.6 in. of sand for the wall. Ramming is done at the rate of 120 to 160 strokes a minute. A 1.5-hp. motor runs the smaller sized machine, while it takes a 6-hp. motor to operate the large one.

The time taken to make a mold, from beginning to end, is as follows:

Diameter of pipe. Inches.	Length. Feet.	Time. Min.	Sec.
1.62 to 2.40	11.8	1	15
2.80 to 3.20	13.8	1	20
3.60 to 4.00	13.8	1	25
5.00 to 6.00	15.7	1	45
7.00 to 9.00	15.7	1	55
10.00 to 12.00	15.7	2	5
14.00 to 15.00	15.7	2	15
16.00 to 20.00	15.7	2	30
22.00 to 26.00	19.7	3	
28.00 to 32.00	19.7	4	
36.00 to 40.00	19.7	5	
44.00 to 48.00	19.7	6	

For the smaller sizes it takes only one man to shovel the sand, whereas the largest require six. The bells are also rammed by the machine, the rammer heads

Fig. 3.—The Ardelt Pipe Molding Machine, with Starting Clutch, Making Bell-Topped Pipe Molds.

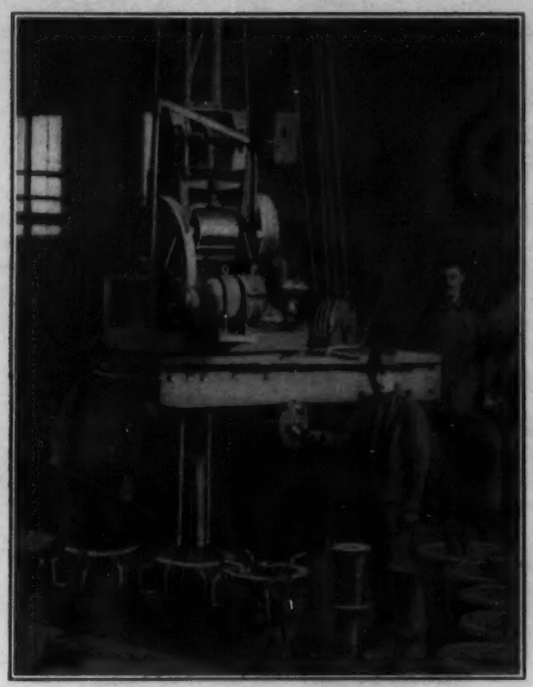


Fig. 4.—The Ardelt Gravity Pipe Molding Machine, Ramming Up Flanged Pipe.

being spread outward and thus working over the enlarged portion of the pattern without trouble.

Figs. 3 and 4 show the machine at work in the foundry of the Lauchhammer Company in Groeditz, Saxony. At this establishment the flasks are attached to a large turntable, electrically operated. The molding machine is mounted on a swinging arm, so that it can be readily adjusted over the center of the pattern in the flask. As soon as the machine has been centered, the rammer head is made to descend at any desired speed. Ramming now commences and is kept going until completed. The machine is then swung out of the way, the hook of the pattern drawing crane is centered over the mold, when the pattern is drawn and placed in the next flask. As the turntable revolves the molds are blackened, dried and poured off, and finally the castings are drawn. The process is for all practical purposes a continuous one.

The Maher & Son Lightning Rod Company, Preston, Iowa, states that it is shipping more of its pure copper cable lightning rod and fixtures this season than ever before, due, it is believed, to the quality of the goods, and which are also placed on the market at a price that allows a good profit to dealers. The company also states that its new patent four-legged brace is meeting with much favor, there being no possibility of the copper standard wearing off or of the bending over of the brace, which has six connections to the roof. Business results, it is said, wherever this rod and its fixtures are shown. It also stated that all the company's vanes are made full bodied of pure zinc, covered with pure gold leaf, and are marketed at a price that allows a substantial profit to dealers. Some territory is still unassigned.

A New Brown & Sharpe Face Milling Cutter

The face milling cutter which has just been brought out by the Brown & Sharpe Mfg. Company, Providence, R. I., incorporates important new features. Notable among these are an arrangement, employing special sleeves, by which one cutter may be used on different machines having various sizes of spindles, thus reducing the number of cutters required in a shop; a provision for the quick release from the spindle, a special advantage in handling large mills, and owing to the close proximity of the cutter to the spindle more working space is given than is possible with cutters having a hub. The various parts of the cutter are shown in Fig. 1, and Fig. 2 is a section of the cutter set for working. The cutter is made with a hole sufficiently tapered to permit a ready release, fitting on a taper split steel sleeve which is screwed on the spindle of the machine. The cutter, keyed to the sleeve as an additional precaution against slipping, is drawn on the taper by a clamping plate and drawing-in bolt. As the drawing-in bolt is tightened in the sleeve is contracted and grips the spindle closely. At the end of the job the cutter can be removed easily by loosening the drawing-in bolt. If the cutter is to be used on several machines, sleeves of the required special sizes are furnished, all of which are

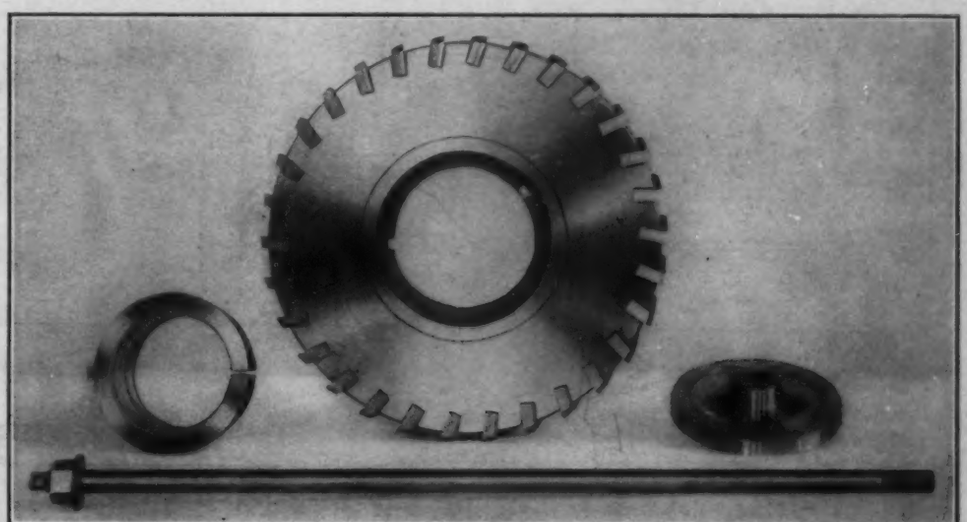


Fig. 1.—The Unassembled Parts of the New Face Milling Cutter Made by the Brown & Sharpe Mfg. Company, Providence, R. I.

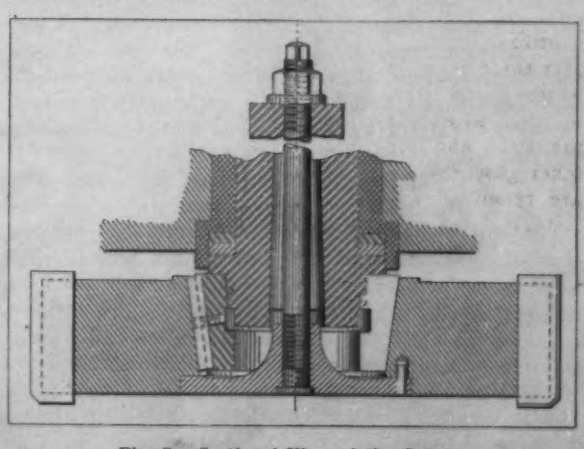


Fig. 2.—Sectional View of the Cutter.

the same size on the outside to fit the cutter hole and vary in their internal diameters to correspond to the sizes of the machine spindles.

The Blake-Knowles Improved Open Feed Water Heater

An Automatic Feed Water Heater and Purifier

An improved type of open feed water heater has recently been put on the market by the Blake & Knowles Steam Pump Works, New York City. It is of new design and combines with the advantages of the open heater for boiler feed water, or water for heating or drying systems, other features of convenience and economy of operation. Figs. 1 and 2 show the exterior and interior of the heater respectively.

Exhaust steam heats the water in this apparatus by direct contact, and the heating capacity of this exhaust is utilized to the greatest possible extent. It is claimed that there is no drop in the temperature at which the water leaves the heater, due to any collection of mud or scale, as all impurities in the water are retained in the filter and all scale forming carbonates, air and other gases that are so dangerous to the life of boilers are removed, so that only pure hot water perfectly suitable for boiler feed or other refined industrial purposes leaves the heater.

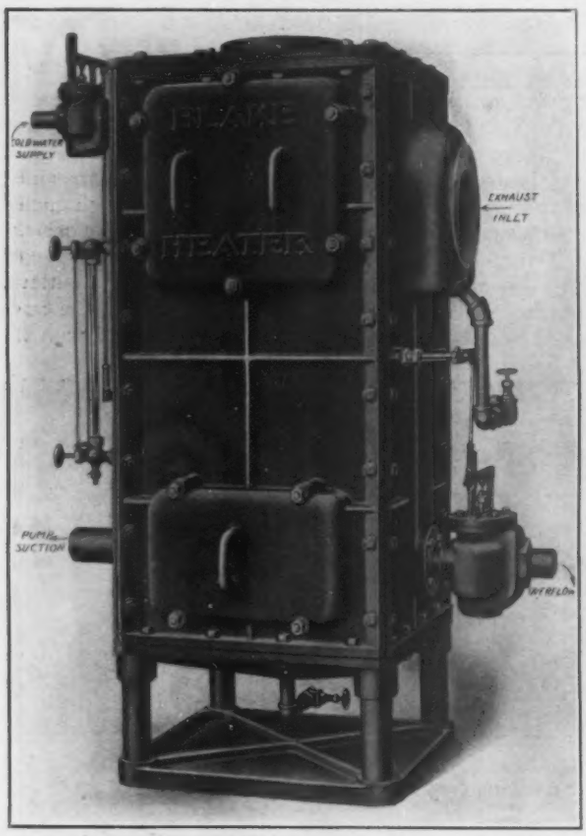


Fig. 1.—Exterior View.

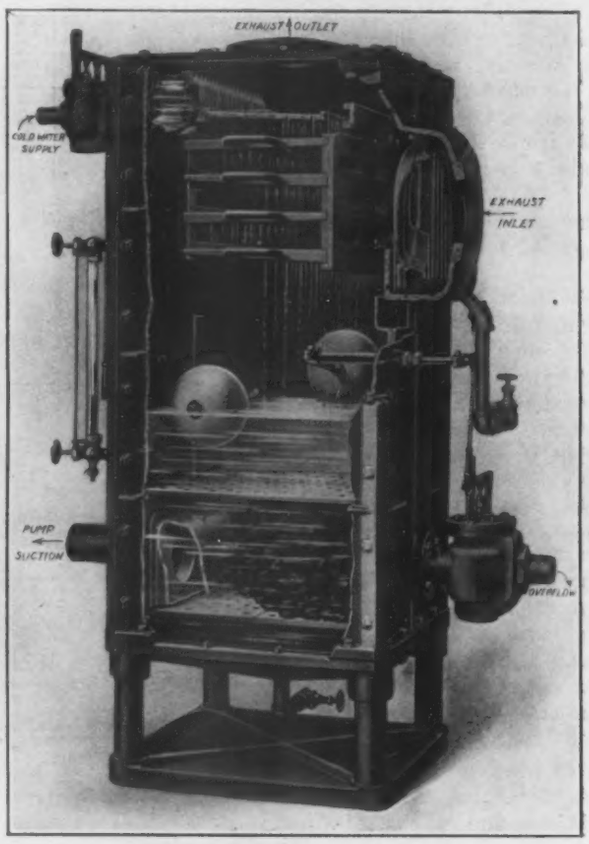


Fig. 2.—Sectional View.

The Improved Open Automatic Feed Water Heater Built by the Blake & Knowles Steam Pump Works, New York City.

The functions ordinarily performed by several pieces of apparatus are combined in this heater. All the oil is extracted from the incoming steam, and, besides heating the feed water, it also filters and purifies it. A storage tank for receiving the water of condensation is also provided. While all these functions are combined in one apparatus, its operation is said to be so simple and so automatic that but little attention is required.

As will be seen from Fig. 2, the heater consists of a vertical cast iron rectangular shell, with the exhaust steam inlet at one side near the top. The oil separator is built into the heater body just inside this inlet, so that all the steam must pass through it before entering the heater proper. Several shallow removable water trays, which are slightly inclined and partly perforated, are arranged one above another inside the heater shell at the top. Above these trays and on the opposite side to the steam inlet is the cold water inlet trough from which the water supply, conducted through an automatically controlled valve, overflows on the trays, and at the lower end of the shell is the filter. The filter bed consists of coke, excelsior or other similar material, confined between two perforated plates, and can be removed through doors provided for that purpose. Beneath the filter bed is a chamber from which the purified water is drawn by the feed pump, while all the sediment collects in the lower part and is drained away through a blow-off connection.

The receiving chamber is above the filter bed and of extra large capacity, so as to take care of the condensation from the heating system, which is received in deluges from the traps, pockets and radiators when they discharge their contents. An automatically controlled overflow at the top of the receiving chamber takes care of any dangerous excess of water. It extends the full width of the shell and forms a skimmer, so that floating impurities can be skimmed off by simply holding the cold water inlet valve open until the heater fills to this point, when the impurities run off through the overflow to the waste pipe. The feed pump suction is located at one side of the feed water chamber, with a vent pipe leading up into the heater body for carrying away any vapor that may collect. An outlet is located at the top of the heater shell, which is used either as an exhaust outlet or vent pipe as is required, depending on whether the apparatus is used as a thoroughfare or draw heater.

In operation such of the exhaust steam as may be required, moving at a high velocity, enters the exhaust inlet, where it impinges upon a peculiarly punctured and bent metal surface. The steam rebounds and passes around to either side, while the oil, on ac-

count of its greater momentum, is carried through the punctured sheet against the back plate of the grating, where it falls into the receiving well and drains away. The oil-free steam now enters the heater shell and fills the space around the trays, where it comes into intimate contact with the water supply which is dropping from tray to tray in a finely divided condition. The water supply enters through a float controlled valve, fills the distributing trough which extends entirely across the shell and overflows from a serrated edge in a thin, even sheet to the trays beneath. The water flows from one to another of these trays over the lower serrated edges and through the perforations and is retarded in its progress, so that it is thoroughly mixed with the steam before falling into the hot well below. Ample space is allowed around the trays, so that the feed water in its finely divided state is heated to the highest possible temperature.

The difference between the normal and overflow water levels in the hot well is sufficient to accommodate the sudden inrush of water from the traps and returns, and in this way provides an adequate storage chamber for the water thus received. Two floats, properly located in the receiving chamber, automatically control the operation of the apparatus. One, connected with the water inlet valve, regulates the cold water supply and maintains a constant water level, while at the same time meeting the demands of the boiler feed water supply. The other, connected with the overflow valve, opens this valve when the overflow level has been reached and allows the excess water to escape to the waste.

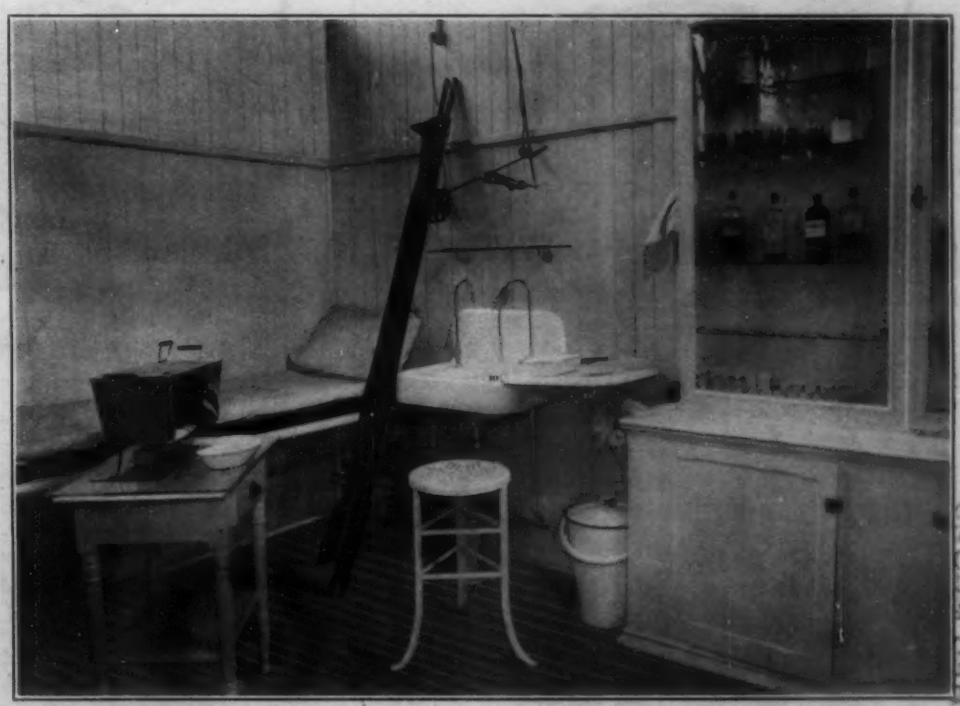
After falling to the receiving chamber, the water and condensed steam percolate slowly through the filter bed and in this process, due to the heat of the water and the special design of the heater, the scale forming carbonates in the water are precipitated and retained by the filtering material, while the gases liberated pass out with the uncondensed steam through the vent pipe at the top of the heater. The purified and heated water drops into the settling chamber and is pumped away free from mud and scale forming matter and ready for boiler feed use. The heavy sediment collects at the bottom of the chamber and is drawn off when necessary through the blow-off connection below the heater body.

It will thus be seen that the operation of the apparatus is entirely automatic and under ordinary circumstances is said to require no attention whatever, an occasional cleaning and such inspection as is given to all parts of a plant being all that are required. Every convenience is provided for this purpose and no pipe joints have to be broken for any of the operations necessary. Pressures ranging from atmospheric pressure to 5 lb. above may be carried in the exhaust line without impairing the efficiency in any way and without requiring any modification in the construction or operation of the heater.

The Billings & Spencer Company's Emergency Hospital

Many industrial establishments now make some provision for treating their injured employees as promptly as possible after accidents occur. Among the more recent firms to provide special accommodations for this purpose is the Billings & Spencer Company, Hartford, Conn. The emergency hospital, shown in the accompanying illustration, is located in a corner of the machine shop and is readily accessible from the other departments of the factory. All the injured employees, regardless of the seriousness of the accident, are required to report there for treatment.

The company has been doing this work for a number of years in a crude and rather unsatisfactory manner, a corner of one of the lavatories being used for the purpose and the outfit kept in a wall cabinet. The results attained led the company to believe that better accommodations would enable even better work to be done, and as a consequence the emergency room was recently established. This room, which was especially fitted up for the purpose, measures 12 x 20 ft., and is finished throughout in white enamel, which can be easily cleaned. As will be noticed from the view given, the equipment includes an enameled iron bed, a sterilizer for both dressings and instruments, a cabinet for instruments, solutions and dressings, hot and cold water, a stretcher for transporting the more serious cases from the various departments and other minor necessities. The chief clerk of the factory office, who has had some previous experience in hospital work, has immediate supervision of the room.



The Emergency Room for Treating Injured Employees of the Billings & Spencer Company, Hartford, Conn.

Any injury sustained by an employee is reported to the foreman of that department immediately, who orders the workman to the hospital for treatment. If the injury proves too serious for the ordinary first aid to the injured remedies, the patient is taken either to his home, to be cared for by his own physician, or to one of the city hospitals. All cases where dressings have been applied report at 9 a.m. every day for inspection and advice until, in the judgment of the man in charge of the emergency room, the injury is cured.

DIESCHER & SONS, Mechanical and Civil Engineers, PITTSBURGH, PA.

An All-Steel Combined Baggage and Mail Car

A New Type Executed by the Pressed Steel Car Company

The Pressed Steel Car Company, Pittsburgh, Pa., has recently completed at its McKees Rocks, Pa., plant six pressed steel combined baggage and mail cars for the Carolina, Clinchfield & Ohio Railway Company. These cars follow the Pennsylvania Railroad Company's standard designs for all-steel passenger cars. Fig. 1 shows the exterior of the car and the other three illustrations are interior views, Figs. 2 and 3 in the mail compartment and Fig. 4 in the baggage compartment. This car, while not as long as the Pennsylvania all-steel mail car which was illustrated and described in *The Iron Age* April 18, 1907, is slightly longer than the wooden cars which it replaces. The interior is divided into two compartments, which are 30 ft. 1½ in. and 30 ft. 2 5-16 in. long, respectively. The maximum outside dimensions are: Length over the buffers, 64 ft. 3¾ in.; width over the lower deck eaves, 9 ft. 11½ in., and hight, 14 ft. ½ in. from the top of the rail to the top of the roof. The car is illuminated by the Pintsch incandescent gas lighting system, the gas being supplied from three storage tanks.

The trucks are of the four-wheel type and have a framing entirely of steel. The brake rigging has an independent set of duplex brakes for each side, thereby dispensing entirely with the brake beams, as the heads are suspended from the hangers attached to the wheel pieces. The wheels are Schoen rolled steel wheels, 36 in. in diameter, and the journals are 5½ x 9 in.

The underframing consists of a center sill made of 18-in. channels, with steel top and bottom cover plates ½ in. thick. The upper plate is one continuous piece and extends the entire length of the sill, while the lower one extends between the rear ends of the Westinghouse friction draft gear with which the car is equipped. The side sills are plate girders, which occupy the space between the window sills and the bottom of the side. These girders are built up of ⅛-in. web plates, reinforced with a 5 x 3½ x 9-16 in. angle at the bottom and a 4 x ½ in. continuous rolled bar at the windows. The center and side sills are connected by rolled channels and two main cross bearers or cantilevers for transferring the load on the side sills to the center sill. The side posts are of channel section, extending in one piece from the bottom of the side girder to the deck sill, and as they are riveted securely to the various longitudinal members and the side girders, they act as stiffening members. The carlines are of pressed steel channels, with flanged edges to take the steel roof.

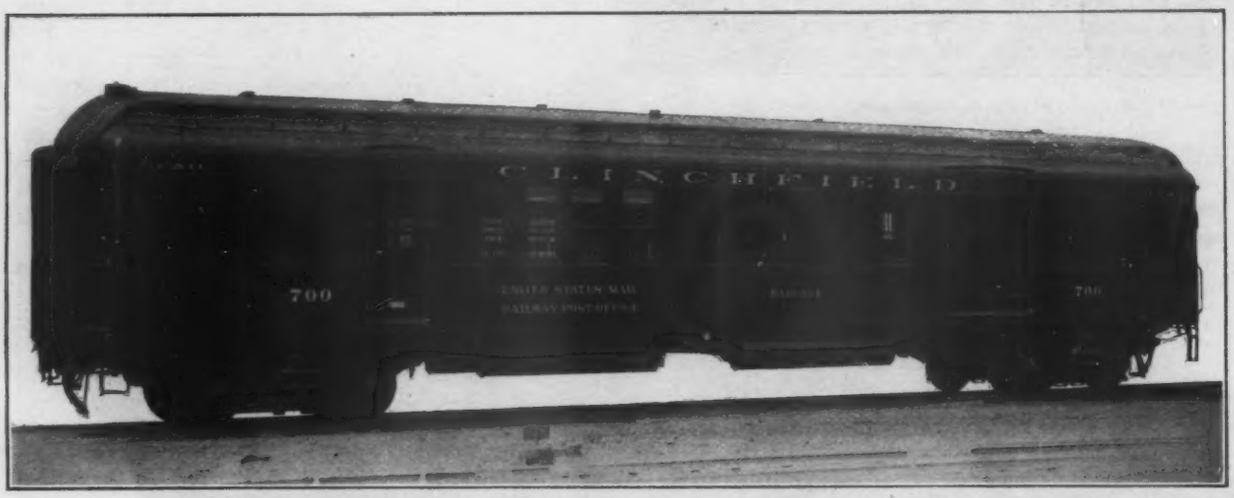


Fig. 1.—A Combined Baggage and Mail Car Almost Entirely of Steel, Built by the Pressed Steel Car Company, Pittsburgh, Pa.

Fig. 2.

Fig. 3.

Views in the Mail Compartment Looking in Opposite Directions.

The floor consists of corrugated iron, covered with Car Carbolith, and in the baggage compartment alone a layer of maple flooring is laid on top of it to protect it from the wear and tear of the baggage. The inside lining of this compartment consists of corrugated iron, and that of the mail compartment is flat steel sheets backed with Ceilinite. All the furniture in the mail compartment, such as letter and paper cases and tables, are built entirely of steel, in conformity with the requirements of the Railway Mail Service Department.

Fig 4.—A View in the Baggage Compartment.

All the tops of the sorting tables are corrugated iron, on top of which are placed rubber sheets and a layer of Monolith. The only wood used in the construction of these cars is in the window frames and the top layer of floor covering in the baggage compartment.

Schutte & Koerting Hydrokineters.

BY OSKAR NAGEL.

It is well known that a proper circulation of water in a boiler is important to economy. Hence the various constructions of boilers have been designed with a view to this end. Some boiler constructions are successful in this respect, while in others, especially in Scotch boilers, it is advisable and in some cases necessary to effect a proper circulation by mechanical means. These mechanical appliances are called hydrokineters and two types are herewith illustrated, both made by the Schutte & Koerting Company, Philadelphia, Pa.

Fig. 1 shows a hydrokineter attached to a boiler, in which *a* is an air cock, *b* a check valve, *c* a starting cock, *d* a water stop valve, *e* a steam valve and *f* the hydrokineter. The apparatus draws the cold water from the lower points and forwards it to the highest water level—*i. e.*, to the hottest water—equalizing the temperature so that the natural physical circulation is considerably increased. This hydrokineter works with a steam pressure of a few pounds just as well as with high pressure. It can therefore be put in operation immediately when starting up the boiler. Its operation is simple and entirely independent of the boiler feed, since it takes the steam, like an injector, from its own boiler. The result is an increase of the evaporation by reason of the vigorous agitation of the water.

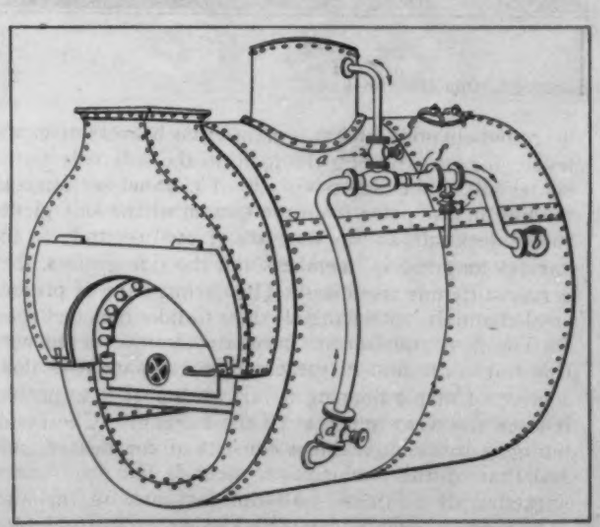


Fig. 1.—The Earlier Koerting External Hydrokineter Applied to a Scotch Marine Boiler.

The hydrokineter must be connected above the highest water level. The suction pipe connects to the coldest place of the boiler. The discharge pipe must discharge under water and is equipped with a check valve. The steam pipe is connected to the hydrokineter, and the air cock must be connected to the highest point between the steam valve and the hydrokineter.

To set the apparatus in operation the water valve *d* is opened and the air cock *a* until water appears, then the cock *a* is shut, the starting cock *c* opened and then the steam valve *e*, after which the starting cock *c* is slowly closed.

Another type of apparatus used for increasing the circulation is the internal hydrokineter shown in Fig. 2. In this type the force of the feed water is used to draw the cold water from the bottom of the boiler and to force it into the upper water levels. The apparatus is connected to the discharge of the feed pipe and works on the principle of the Koerting eductor; the cold water is drawn in through a suction pipe which extends to the bottom of the boiler, whereby a strong

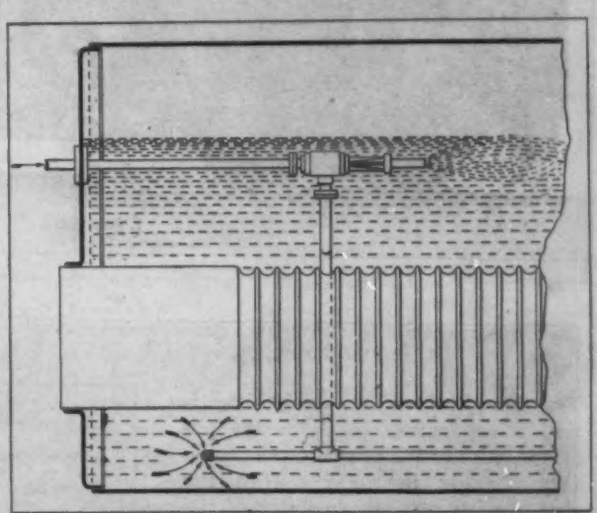


Fig. 2.—A New Internal Hydrokineter Made by the Schutte & Koerting Company, Philadelphia, Pa.

circulation is created. The advantages obtained by the application of thjs apparatus are the same as the ones effected by the external hydrokineter shown in Fig. 1. The life of the boiler is prolonged, the cost of maintenance reduced and the leaks of rivets and seams prevented.

Sheffield Manufacturers and "Blister" Steel"

The crucible steel manufacturers of the Sheffield district, England, were called together April 18 to discuss a change proposed by the Committee on Iron and Steel Nomenclature of the International Association for Testing Materials. The committee had suggested an extension of the definition of "blister steel," a name hitherto given in the Sheffield trades to cemented Swedish wrought iron or other wrought iron of similar quality, so that it should in future cover "steel made by carburizing wrought iron, by melting it in contact with carbonaceous matter, which may also be made by carburizing a low carbon steel." Prof. J. O. Arnold pointed out that the proposal of the committee might lower the status of the higher grades of Sheffield steel and lead to fraudulent competition with them; that besides affecting "blister steel," it would ultimately involve the quality of both shear and crucible steel. A committee of six was appointed to communicate with the Committee on Nomenclature and to guard the interests of the Sheffield manufacturers.

Smith & Mills Variable All-Geared Drive Shaper

An improved design of back geared crank shaper has been recently brought out by the Smith & Mills Company, Cincinnati, Ohio. This is built along the same lines as the maker's regular back geared crank shaper, with the exception that the cone pulley has been dispensed with and an all-geared drive substituted.

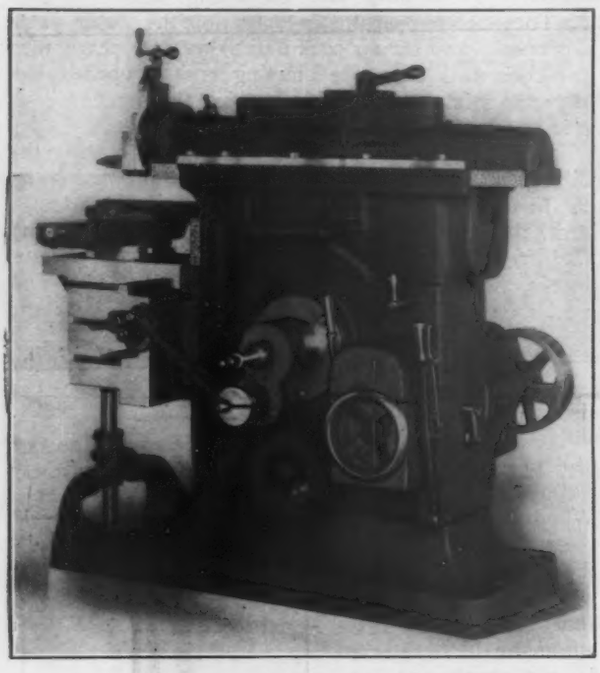


Fig. 1.—The Variable All-Geared Drive Back-Geared Crank Shaper Built by the Smith & Mills Company, Cincinnati, Ohio.

The speed changing mechanism is within convenient reach of the operator, who can thus make the necessary changes in the speed of the shaper without removing any of the parts. The device is simple and effective, and at the same time is very compact, as it is attached to the sides of the column and contains all the gears and parts which are required to perform its work. Advantages claimed for this type over the cone driven machine are saving of space, elimination of the countershaft, and development of full power at each speed change with no chance for slippage. The absence of countershaft, cone pulley and shifting belts also reduces the chance of injury to the operator when changing speeds. Fig. 1 is a general view of the machine, while Fig. 2 shows the arrangement of the gears changing the speeds.

The belt from the line shaft leads directly to tight and loose pulleys at the rear end of the driving shaft, and the changes in cutting speeds are obtained by four pairs of gears thrown into mesh through the pinion shifting device shown in Fig. 2. Eight changes of speed in all are provided, four being obtained through the speed change gears, and the same number by the back gears inside the column. These gears are divided into two sets of four each that are contained in separate castings and mounted on each side of the column at the rear. The arrangement of the gears is clearly shown in Fig. 2, and it will be noticed that the driving shaft which passes through the column has sets of two gears mounted on both sides of the column. These gears are free to slide longitudinally with other sets mounted on a secondary shaft above the main shaft. These gears transmit motion to the ram through mechanism contained in the interior of the column. The long lever at the left of the column, Fig. 2, brings different combinations of gears into mesh through a connecting rod. With the small lever at the back of the column in the position A, two changes of speed may be obtained by manipulating the long lever, while by moving the small lever to position B two more changes are obtained, making four, and this number is doubled by throwing the back gears in or out, which is done by the upper transverse lever. The lever for shifting the change gears is provided with a latch and quadrant, which makes it possible to lock it and the gears firmly in position.

It will be noticed that tight and loose pulleys are shown in place on the main shaft in Fig. 2, while Fig. 1 shows a single friction driving pulley. The former arrangement is the one employed on the standard designs, but the single friction driving pulley can be furnished instead. A complete self-oiling outfit, including a pump that will keep all the gears of the drive as well as those in the interior of the column constantly lubricated can also be supplied.

These shapers are built in three sizes, 16, 20 and 25 in.; the following table gives the principal dimensions and specifications:

	16 in.	20 in.	25 in.
Extreme length of stroke, inches	17	21	26
Cross motion of table, inches	21	22	26
Vertical adjustment, inches	15½	16	14
Distance between table and ram, in.	17½	18½	18
Feed of tool block, inches	6	7	8
Ram bearing in column, inches	30	35	41
Length top of table, inches	17	21	45
Width top of table, inches	12	13	14
Size of vise jaws, inches	10 x 2	11 x 2	12 x 2
Opening in vise, inches	8	9	10
Width of belt, inches	3	3	3
Number of speeds of ram	8	8	8
Diameter of driving pulleys, inches	12	14	14
Width of driving pulley face, inches	3½	4	4½
Speed driving pulleys, rev. per min.	300	330	330
Weight domestic shipment, pounds	2,500	3,150	3,950

This shaper can also be arranged for motor drive for which what is known as the No. 10 motor drive is recommended. This requires a projection or pad attached to the base for supporting the motor. Direct connection is made between the shaper and the motor by a cast iron gear wheel fitted to the driving shaft and a cast iron pinion on the armature shaft connected by a rawhide pinion placed between them and securely attached to the motor frame. When this drive is used the three gears are covered by a guard. With another motor drive arrangement which is cheaper the motor is placed on the floor and connected to the shaper by a chain and sprocket wheels.

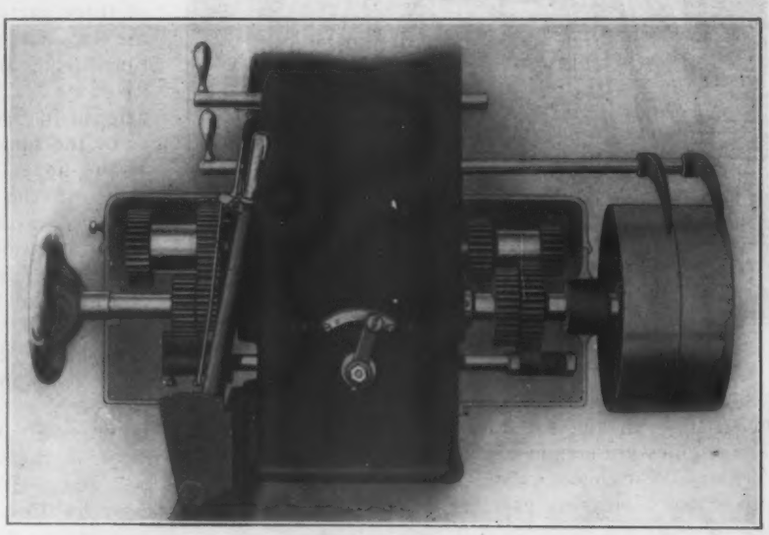


Fig. 2.—Rear View with the Gear Covers in Section, Showing the All-Geared Drive.

The bill establishing a bureau of mines within the Department of the Interior has passed both houses of Congress, and now goes to the President.

New Baltimore & Ohio Freight Locomotives

For freight service on the Baltimore & Ohio Railroad there are now being delivered 230 locomotives of the type shown in Fig. 1. These are being built by the American Locomotive Works, Schenectady, N. Y., are designed for burning bituminous coal and will exert a tractive effort of 42,158 lb. The weight of the locomotive is 220,300 lb. and the weight on the drivers 198,580 lb.; complete with the tender the weight is

Fig. 1.—One of the New Consolidation Freight Locomotives Being Built for the Baltimore & Ohio Railroad.

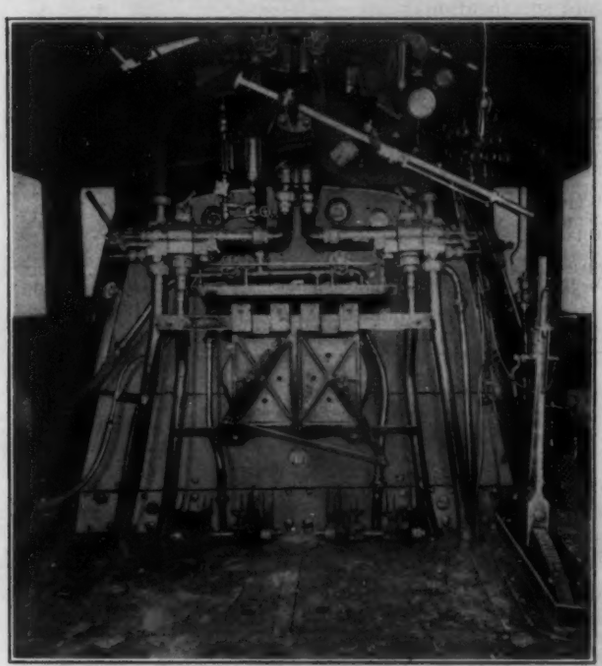


Fig. 2.—A View in the Cab.

368,370 lb. The locomotives have a driving wheel base of 16 ft. 8 in. and a total wheel base of 25 ft. 7 in. The engines are simple engines, with 22 x 30 in. cylinders and Walschaert valve gear. The boilers are designed for a working pressure of 205 lb., and contain 280 tubes of 2¼ in. outside diameter and 15 ft. 8¾ in. long between the sheets. The total heating surface is 2774.08 sq. ft. The grate area is 57.05 sq. ft. The hight of the center of the boiler above the rail is 9 ft. 10 in. The eight driving wheels are 60 in. in diameter, and the engine truck wheels and the tender wheels 33 in. in diameter. The tender has a water capacity of 7000 gal. and a coal capacity of 15 tons.

Fig. 2 gives a view in the cab of one of these new locomotives, showing among other interesting details the unique sliding doors to the firebox and the facile means for opening and closing them. Other somewhat unusual conveniences for the engineer and fireman are also to be observed.

In addition to these consolidation engines, the Baltimore & Ohio equipment order includes 26 Atlantic type passenger engines, 70 passenger coaches and 10,000 freight cars. Two electric locomotives, capable of starting a 6000-ton train on a level track, were delivered in March, and are now in service on the Baltimore & Ohio Belt Line through Baltimore. Authority was recently given for the purchase of 30 Mallet locomotives for road use on the mountain division, the weight of which will be about 250 tons each.

The Woodstock Safety Tapping Chuck

A chuck which is intended for working tough metal, blind tapping and bottoming shallow holes where the stop on the tapping machine cannot be relied upon, has been developed by the Woodstock Safety Chuck Company, Woodstock, Ill., and is illustrated herewith. If the tap binds in the work or reaches the bottom of the hole it is automatically released by the chuck and prevented from breaking.

Broken View of the Woodstock Safety Tapping Chuck.

This chuck consists of three parts, the shell, the tap holder or friction disk, and a coil spring. The tap is gripped in the tap holder by the square portion at the upper end. The body of the chuck is provided with a series of graduations corresponding to the sizes of taps ordinarily used. In operation the shell is simply screwed up until its upper edge coincides with the graduation corresponding with the size of the tap being used. This movement of the shell compresses the spring to the proper degree for that size tap and acts as a positive adjustment for the friction disk holding tap. It is stated that this pressure can be put on the friction and maintained as delicately and accurately as the action of the best spring scale made. One of the advantages of this means of holding is that a small boy can change the taps without much chance of error in adjustment, except by carelessness; nothing is left to his judgment.

Four sizes of chucks are made to handle taps ranging from 7-16 in. in diameter down to the smallest made. Four taper sockets are also made for use in connection with these chucks, which makes it possible to use them in any machine having a taper spindle, such as an automatic reverse or reversible drill press, a tapping machine or a lathe.

The Svenson Proportioning Concrete Mixer

Operable Either as a Continuous or Batch Mixer

A concrete mixer claiming the good features of both the continuous and batch types, but still exceedingly simple and efficient, has been developed by the Svenson-Shuman Machine Company, Bessemer Building, Pittsburgh, Pa. Fig. 1 is an exterior view of the machine, while Fig. 2 is a sectional elevation showing the different parts. One shaft which runs at constant speed performs all the work. It measures the three ingredients, mixes them dry and then wet, and finally discharges them. As a mixer gets the hardest kind of use and is often handled by unskilled laborers, simplicity is very important. It is stated that the Svenson mixer has the smallest number of running parts of any proportioning mixer now on the market, and has no small machinery parts likely to break.

The proportioning device consists of the conical screw at the right end of the shaft and two gates. Although very simple, it is said to be very reliable and to be adjustable to a greater degree of accuracy than any other machine now on the market. The materials pass from the hoppers into the measuring screw, and the position of the gates in each of the hoppers determines absolutely the amount of that ingredient fed by the screw. While the machine is running the proportions can be instantly changed by the hand wheel shown in Fig. 2, which regulates the size of the gate opening.

The mixing chamber is much larger in diameter than the conveyor which feeds it. This prevents it from running full and leaves ample room to allow the paddles to act as shovels and dig down into the mass and thoroughly mix it. While the general tendency of the paddles is to shovel the mixture forward, their individual actions are different, as some shovel forward and others backward, with the result that the mass is thoroughly mixed in a very short time.

The mixer is all iron and steel, except two oak running boards. Most of the metal parts are forged and rolled steel, cast iron being used very sparingly and only where necessary. This construction and the simplicity of the moving parts makes this mixer light and strong, both of which are necessary in a portable mixer. The engine drives the mixer shaft through two forged steel gears having machine cut teeth. A friction clutch between the engine and the mixer shaft

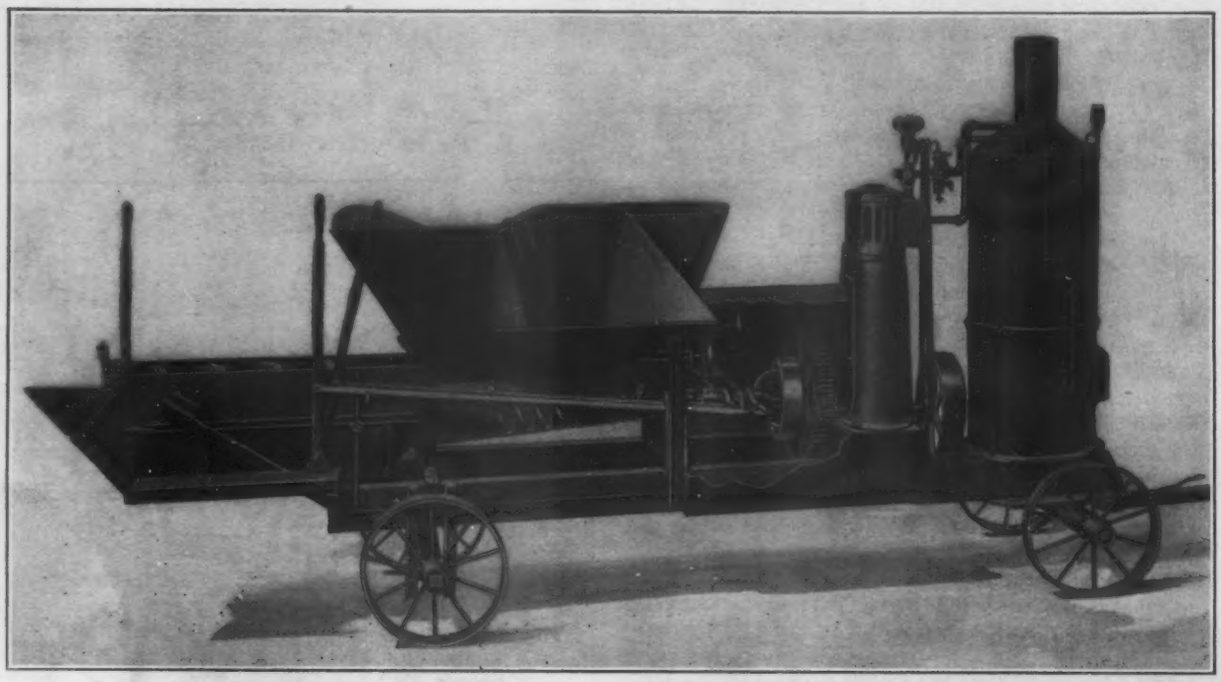


Fig. 1.—An Automatic Proportioning Concrete Mixer Built by the Svenson-Shuman Machine Company, Pittsburgh, Pa.

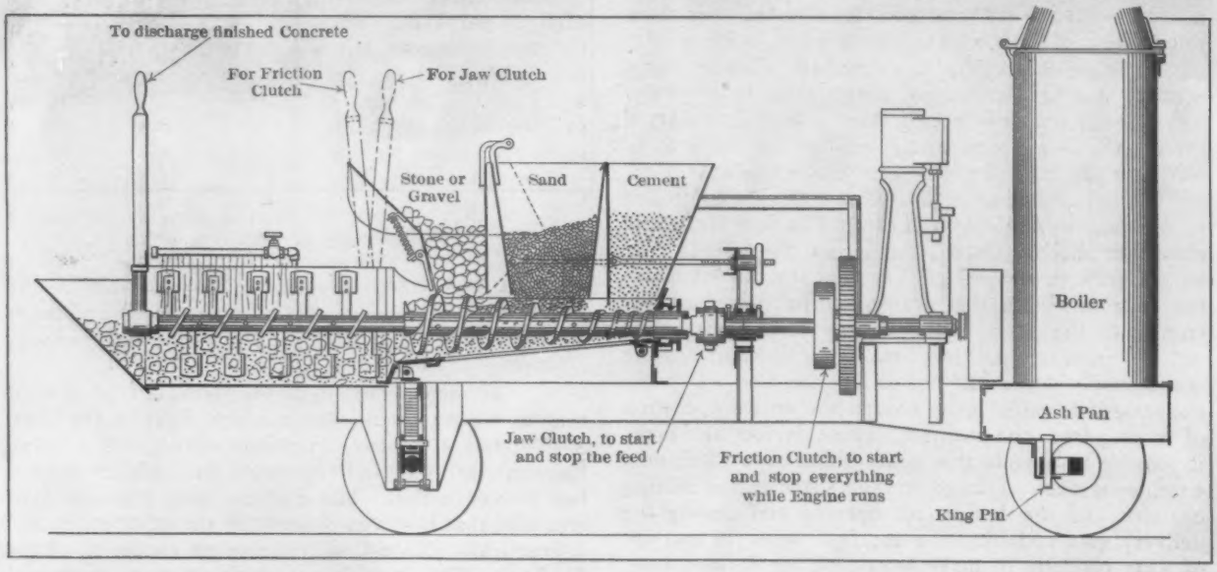


Fig. 2.—Sectional Elevation, Showing the Means by Which the Ingredients Are Proportioned.

allows stopping and starting the mixing temporarily, while the engine runs continuously. This clutch is also a safety device in case the mixer should clog as it slips under an overload. All bearings are protected against entrance of sand and dirt, and the one at the discharge end has a cover and interlocking collars. The conveyor screw and the paddle points are chilled to produce a glass hard surface to withstand wear. Should it become necessary, the screw conveyor can be replaced in about 12 minutes.

A concrete mixer should be easy to charge. Many are not because their construction makes low hoppers impossible. In the Svenson mixer the stone and sand hoppers are so low that shoveling from the ground is easy. The cement hopper holds from three to four sacks and has a steep slope, which insures a positive flow of the cement. It is to one side and back of the other hoppers, where the cement attendant can serve it without interfering with the other men.

The manufacturer furnishes a table indicating the proper position of the cement and sand gates for all the customary proportions of concrete mixtures. To set the gates, enough material is shoveled into each of the three hoppers to cover the conveyor screw. Then if a 1:2:5 mixture is required, one bucket of cement is placed in the cement hopper, two of sand in the sand hopper and five of stone in the stone hopper. The machine is then started, and if all hoppers empty simultaneously the setting is correct; if not, the regulating wheel is turned until they do, when the test is repeated. Then the hand wheel can be padlocked and thus absolute uniformity of the mixture insured.

The mixing begins as soon as the materials leave the hoppers. The cement is carried forward by the screw under the sand and mixes with the latter. Similarly this mixture of cement and sand meets and mixes with the stone on the way to the paddle or mixing chamber, into which they enter as a compact stream. Thus the mixing is already well started when the materials reach the mixing paddles which complete the work of dry mixing in the first half of the chamber. Passing along, the dry mixture is brought under a spray of water and here the final wet mixing takes place. Carrying on the mixing in an open trough enables the work to be watched and its sufficiency easily ascertained.

The entire operation of the machine is controlled by one man through three levers. The first opens and closes the discharge gate, the second throws the conveyor screw in and out of gear, and the third controls the friction clutch that transmits the power of the engine to the main shaft. These levers are easily reached from one position, and as the operator has the water supply under his control and can also watch the hoppers, it is possible to govern the entire operation of mixing from one position. These devices also make it possible to operate this mixer either as a batch or a continuous one. A large storage space in the mixing chamber and the devices for opening and closing the delivery gate and throwing the feed screw in and out of gear combine to make it one of the former type, while by opening the gate it becomes a continuous mixer.

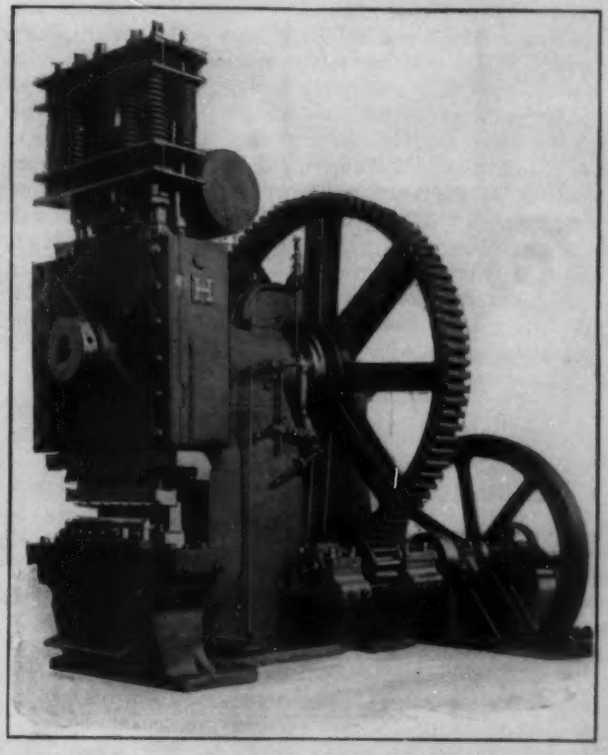
Three sizes of mixer are built, and the capacity and other specifications are given in the following table:

	No. 1.	No. 2.	No. 3.
Capacity per hour, cubic yards	7	12	16
Size of engine, horsepower	4	6	9
Number of hoppers	3	3	3
Hight of stone and sand hoppers, feet and inches	3 9	4 3	4 9
Overall length, feet	11	17	20
Approximate weight complete, pounds	3,900	6,000	7,500
Approximate weight without engine or boiler, pounds	3,300	4,500	5,500

This mixer can be supplied to operate by any kind of power, although the standard equipment is a vertical steam engine and boiler. A gasoline engine or an electric motor with speed reduction gear equipment can be furnished if desired. The mixers can be furnished without any motive power and without trucks or wheels. Where the machine is intended to be used for paving or other work requiring frequent changes of position, a traction device applying power to the rear axle can be furnished for the two larger sizes.

The Long & Alstatter Splice Bar Machine

The volume of orders for special machinery placed by the large steel mills during the past few months is probably the best illustration that can be furnished of the increasing activity in this line. Included in these orders are very heavy splice bar and tie plate machines with steel bodies and capable of exerting considerable power. The frames of the machines were formerly made of cast iron, but since the demands made on them



A New Continuous Splice Bar Machine Built by the Long & Alstatter Company, Hamilton, Ohio.

increased because of a corresponding increase in the weight of the work handled they are more and more being built with cast steel frames, giving them greater rigidity and power of endurance.

The accompanying engraving shows a type H continuous rail joint splice bar machine, built by the Long & Alstatter Company, Hamilton, Ohio, for a large Eastern steel mill, and illustrates the tendency toward heavy construction. The machine is of the same general type that has been ordered by the other mills, and is practically all steel, with the single exception of the flywheel. This machine is equipped with a special automatic hold-down attachment for handling the heaviest type of nickel steel splice bars, and will punch six holes at each stroke at the rate of 25 strokes per minute. The attachment is operated through powerful springs, exerting a pressure of 60,000 lb.

The machine weighs 85,000 lb. and is arranged for electric motor drive, a 50-hp. motor being used for that purpose. As will be noticed from the illustration, an original way of attaching the motor is another feature of the machine. As was previously mentioned, steel is employed for the couplings, face plates, pinions, slide, wheels and body, the last weighing 43,000 lb.

The Carnahan Tin Plate & Sheet Company, Canton, Ohio, is adding two cold mills and one hot mill to its plant.

A New Blast Furnace Top

Mechanical Charging Device Brought Out in Great Britain

At a meeting of the Cleveland Institution of Engineers, held at Middlesbrough, England, April 11, a paper was read, prepared by E. J. W. Richards and Thomas Lewis of Glengarnock, Scotland, on "Mechanical Charging of Blast Furnaces." Some views were given of a new charging apparatus designed by the authors and a model was shown. The authors took exception to the view often expressed that mechanical charging would not pay in the case of furnaces of less than 1400 to 1500 tons weekly output. They believed that even for comparatively small outputs a machine can be found that will answer all requirements, working with precision, handling materials carefully and being under good control. The point was made that any furnace is liable to work down more quickly one day than another, and there is a difficulty in getting the fillers to keep the stock line up to the level, whereas with mechanical filling the rate of charging can always be regulated to suit the requirements. Moreover, a much greater regularity of working of the furnace can be obtained when the furnace is kept at one constant level—a difficult condition with hand labor, but one which should be always possible with mechanical charging.

Conditions Desired in Charging

The desiderata in blast furnace charging are thus summarized in the paper and then commented on:

1, That the material should be put into the furnace with as little breakage as possible; 2, that it should be distributed evenly all over the surface of the stock; 3, that there should be as little machinery as possible on the furnace top; 4, that there should be no escape of gas during charging; 5, that all the movements of raising and discharging the material, the lowering of the bell, and the means of distributing the charge should be capable of being controlled from one point; 6, that the first cost and maintenance charges should be low; 7, that the design should admit of some flexibility in details to suit local conditions and the different methods of charging.

One of the strongest objections to many of the systems of mechanical charging is the dumping and consequent breakage of the materials, particularly of the coke. That has prevented many furnaces from adopting mechanical means, but the objection might equally well be applied to hand filling. On the other hand, some mechanical devices err not so much in the hight of any one drop as in the number of such drops, the material being thrown this way and that several times in its passage from the stock ground to the furnace, with the idea of getting the materials well mixed, but greatly to the detriment of the more friable portions of the charge. For this reason the double bell types with connecting sleeve have been condemned.

As to the even distribution of the materials over the furnace, nothing simpler than the cup and cone can be devised for radial distribution. In circumferential distribution around the furnace, with the high pressure and speed of working of the modern furnace a very slight difference in density of materials at one point may cause great trouble. For example, a bell which swings slightly off the center for a short period has been found sufficient to destroy the lining at one side. The aim should be as nearly as possible to approximate the conditions of hand charging.

As to the gearing on the furnace top, under conditions which prevail there exposed to the inclemencies of the weather and to heat, dust and gas, the maintenance of elaborate gearing is a costly item. The gearing should be reduced to a minimum and be protected from these deteriorating influences.

The prevention of the escape of gas in charging becomes absolutely imperative where there is a head gear over the top of the hopper. Every cubic foot is of value in the works for heating stoves, firing boilers or driving gas engines. Several devices have been used to prevent the escape of gas even with barrow charging.

The authors believe that a charger should be capable of being modified in details to suit local conditions. Thus at one place it may be required to take up a skip with about 6 tons, and at another place a smaller skip may meet the requirements, or it may be preferred to send up the ordinary barrow to be automatically discharged. Where so many works have their own coke ovens it would also be an advantage to send the coke oven skip to the top without further handling.

A New Charging Device

Views were shown by the authors, among them being one of the Baker-Neumann charger with deflecting plate and revolving hopper, adopted by the United States Steel Corporation for the Gary, Ind., furnaces. The authors think it would hardly recommend itself to managers in the Middlesbrough district owing to the heavy top gear and the levers and mechanism in the furnace top. Another type of distributer for use with a double bell was shown, a type greatly favored in Germany. The apparatus made by the Brown Hoisting Machinery Company was said to be the best, as being the nearest approach to barrow charging of anything now in use. An illustration was given of a charger which the authors have been experimenting with, and in the design of which they sought to cover all the points enumerated above as being essential to a satisfactory charging machine. This apparatus was described at some length, and lantern slides and a model of it were shown, but in none of our British contemporaries are any drawings or other illustrations given. The revolving of the chute is intermittent, the chute moving forward after every second skip is discharged. Circumferential distribution is satisfactorily provided for. An important feature is the facility which is afforded for the placing of "blanks" at any circumferential point of discharge into the hopper. To eliminate as far as possible the breakage of materials, the hight of the charger is brought down to the minimum, and the changes of direction of the materials in passing from the skip to the bell are made as easy as possible.

Discussion

In the discussion of the paper the new apparatus was favorably commented on, though a number of furnacemen doubted the labor saving claims for mechanical charging. A representative of the Skinningrove Iron Works referred to an estimate received from the United States on charging apparatus for four furnaces. It amounted to $35,000 or $40,000, but there was no resulting reduction in labor cost. He had seen these mechanical chargers on the Continent and found generally that more men were employed to get the ore, stone and coke to the bottom of the furnace than he employed altogether in the charging of the furnace. The most important feature in connection with the apparatus was the saving of the gas. A representative of Bolckow, Vaughan & Co. said that at Eston they had three furnaces with closed tops and wished they had three times as many. Another speaker thought Germany far ahead of Great Britain in the handling of blast furnace materials. In the case of coke there is but one drop from the time it is made until it is lowered into the furnace. In Germany skips hold 5 tons, and the speaker suggested that in the Lewis apparatus, which the paper had de-

scribed, skips of large capacity be used. The loss of coke from breakage is much less with the larger skip loads. Other speakers emphasized the great loss in irregular working, due to fine coke. The short drop of coke with the Lewis top was commended; also the fact that the ordinary barrow can be used in charging. One speaker took issue with the assertion credited to Mr. Uehling that 90 per cent. of the difficulties at blast furnaces are due to faulty charging. He thought 10 per cent. nearer the mark. Greville Jones considered the great reduction the Lewis machine brought about in the breakage of coke was very important. His company had experimented with large and small coke and found that the latter reduced the output of the furnace 1¼ per cent.

The Merchants and Manufacturers Exchange Buildings

Interesting Structural Work Involved

A part in the extensive improvements to the Grand Central Station in New York City, that have been under way for several years, will be the erection of commercial buildings over the depressed railroad tracks. Work was recently started on two of these, which have been leased for a period of 50 years to the Merchants and Manufacturers Exchange. An account of the organization and business of the exchange and the service it plans to afford manufacturers in their dealing with retailers was given in *The Iron Age* November 25, 1909, page 1687.

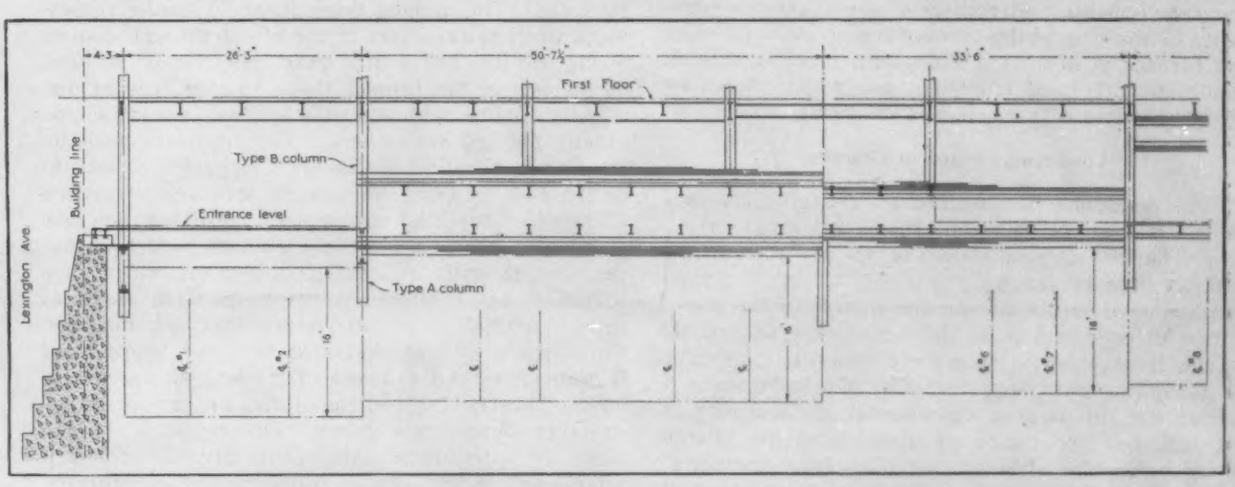


Fig. 1.—A Typical Cross Sectional Detail Showing the Support of the Merchants and Manufacturers Exchange Buildings Over the Tracks of the Grand Central Terminal.

Each building occupies an entire block, the southern one extending from Forty-sixth to Forty-seventh streets, and the northern one extending from Forty-seventh to Forty-eighth streets, north and south, and both from Lexington avenue to Depew place, east and west. They are alike in construction, being 13 stories high, or 206 ft. above the street. Over the lower course of granite the walls will be of brick and terra cotta, with four massive Doric columns of Indiana limestone, nearly 53 ft. high and 6 ft. in diameter, on the side facing Lexington avenue. From the eleventh to the thirteenth story are arcades, which will be illuminated at night and visible to a considerable distance. The buildings will be entirely of fireproof construction.

In the south building will be the new Grand Central Palace, approached from the doors in the center through a vestibule 100 ft. wide, finished in cream colored marble and stone. From the vestibule will rise between the elevators a staircase 50 ft. wide leading to the main floor. The main floor will be 200 x 275 ft., unbroken except by the stairs, columns and elevator shafts, and with the ceiling over the central portion three stories, or 51 ft. high. Surrounding the central portion will be exhibition spaces and galleries, giving a total floor area of 125,000 sq. ft., or about 3 acres. Like the old Grand Central Palace and Madison Square Garden, this part will afford accommodations for large temporary exhibitions or entertainments, such as the annual automobile, electrical, business and other shows, mass meetings, &c. The nine stories above the Grand Central Palace will be devoted to the exhibits of the New York Furniture Exchange.

The north building will provide similar accommodations for other lines of business, as, for instance, clothing, leather goods, men's furnishings, &c. The floors will be divided by suitable partitions, as now in vogue in many of the large department stores. Each building has a floor area of 596,800 sq. ft.

One of the most interesting features is the spanning of the 17 tracks of the New York Central Railroad, necessitating a special column spacing. About 50 per cent. of the columns for the buildings rest on heavy girders, which are supported by columns between the tracks, as shown in the detail of a portion given in Fig. 1. Fig. 2 shows cross sections of the two typical styles of columns; type A will be used for carrying the girders and type B for the buildings themselves, as shown in Fig. 1. In the sketches only one cover plate

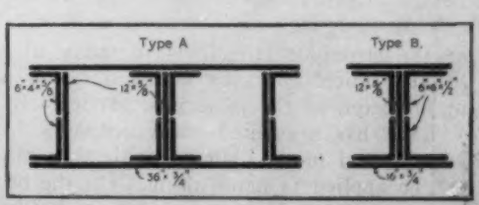


Fig. 2.—Cross Sections of the Types of Columns Employed.

is indicated, but where extra strength is required the plates will be piled up to a thickness of 2½ in. Wherever possible a column will be run continuously from the basement to the roof, the section changing at the first floor from type A to B. The maximum load carried by any one column will be 1230 tons.

The girders will be built up of plates and angles. The webs will be ¾ in. thick, stiffened where necessary by vertical angles, and will have two 8 x 8 x ⅝ in. angles at the top and bottom, respectively, with 20 x ¾ in. cover plates, which will be piled up in some cases to a thickness of 4 in. The heaviest girder will weigh 26 tons, will be 8 ft. 6 in. deep and 57 ft. long. For each building 9300 tons of steel will be required.

The Grand Central Station architects, consisting of the associated firms of Reed & Stem and Warren & Wetmore, are the architects. The structural work was designed by Balcom & Darrow, and will be furnished by the Jones & Laughlin Steel Company and the American Bridge Company.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1¾ in. round and square	₩ ℔ 1.90¢
1½ to 4 in. x ⅜ to 1 in.	₩ ℔ 1.90¢
1½ to 4 in. x ½ to 5-16	₩ ℔ 2.10¢
Rods—⅜ and 11-16 round and square	₩ ℔ 2.10¢

Angles:	Cts ₩ ℔
3 in. x ¼ in. and larger	2.10¢
3 in. x 5-16 in. and ⅜ in.	2.35¢
1½ to 2½ in. x ¼ in.	2.20¢
1½ to 2½ in. x 5-16 in. and thicker	2.10¢
1 to 1¼ in. x 5-16 in.	2.20¢
1 to 1¼ x ⅜ in.	2.30¢
½ x ⅜ in.	2.40¢
½ x ½ in.	2.50¢
⅝ x ⅝ in.	3.55¢
¼ x 3-32 in.	4.35¢

Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2½ x 5-16 in	2.25¢
3 in. and larger	2.15¢
Beams	2.10¢
Channels, 3 in. and larger	2.30¢
Bands—1½ to 6 x 3-16 to No. 8	2.35¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

per ℔

Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ ℔ 2.90¢	3.00¢
Nos. 18 to 21	₩ ℔ 2.95¢	3.10¢
Nos. 22 and 24	₩ ℔ 3.05¢	3.20¢
No. 26	₩ ℔ 3.10¢	3.30¢
No. 28	₩ ℔ 3.20¢	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment, ₩ ℔ 12 @14½

Patent Planished, W. Dewees Wood, ₩ ℔ A, 10¢; B, 9¢ net

Galvanized.

Nos. 14 to 16	₩ ℔ 3.20¢
Nos. 22 to 24	₩ ℔ 3.55¢
No. 26	₩ ℔ 3.75¢
No. 28	₩ ℔ 4.10¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized.

Nos. 22 and 24	₩ ℔ 5.75¢
No. 26	₩ ℔ 6.25¢
No. 28	₩ ℔ 7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd.
No. 24, ₩ 100 sq. ft.	$3.35	4.80
No. 26, ₩ 100 sq. ft.	2.95	4.00
No. 28, ₩ 100 sq. ft.	2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:	
IC, 14 x 20	$6.35
IX, 14 x 20	7.60
A, Charcoal:	
IC, 14 x 20	$5.40
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20, 107 ℔	$4.40
IX, 14 x 20	5.40

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating $8.50

IX, 20 x 28 with an 8 lb. coating 10.50

Seamless Brass Tubes—

List November 13, 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 22¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ ℔

High Brass Rods—

List August 1, 1908. 14½¢ ₩ ℔

Roll and Sheet Brass—

List August 1, 1908. 14½¢ ₩ ℔

Brass Wire—

List August 1, 1908. 14½¢ ₩ ℔

Copper Wire—

Base Price. Carload lots mill 14¾¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ ℔ 18¢

Sheet Copper Cold Rolled, 1¢ ₩ ℔ advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot.

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.

Planished Copper, 1¢ ₩ square foot more than Polished.

METALS—

Tin—

Straits Pig ₩ ℔ 34½@35¢

Copper—

Lake Ingot	₩ ℔ 14¾@15 ¢
Electrolytic	₩ ℔ 14¾@15 ¢
Casting	₩ ℔ 14¼@14½¢

Spelter—

Western ₩ ℔ 6½@6¾¢

Zinc.

No 9, base, casks ₩ ℔ ¢ | Open ₩ ℔ 8½¢

Lead.

American Pig	₩ ℔ 5 @5¼¢
Bar	₩ ℔ 6¾@6½¢

Solder.

½ & ½, guaranteed	₩ ℔ 22¼@22½¢
No. 1	₩ ℔ 18¾@19¼¢
Refined	₩ ℔ 17¼@17¾¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ ℔ @10¢
Hallette	@10¢
Other Brands	@9½¢

Bismuth—

Per ℔ $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting 24¢

Rods & Wire Base Price 31¢

Sheets Base Price 33¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents ₩ ℔
Copper, Heavy cut and crucible	10.75@11.00
Copper, Heavy and Wire	10.50@10.75
Copper, Light and Bottoms	9.50@ 9.75
Brass, Heavy	7.00@ 7.50
Brass, Light	5.75@ 6.00
Heavy Machine Composition	9.75@10.00
Clean Brass Turnings	7.00@ 7.25
Composition Turnings	8.00@ 8.25
Lead, Heavy	....@ 3.50
Lead, Tea	.. .@ 3.25
Zinc Scrap	....@ 3.75

Nicholson Files

Sales of good files should remind you
You can all avoid a "rut" —
Just by stocking up and selling
Files like these that *always cut.*

Some Hardware merchants get in the "rut" of stocking any kind of files just because they are *cheap.* But such files don't *sell* and are "dead stock" on their shelves.

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